

Enterasys Matrix[®]

DFE-Gold Series

Hardware Installation Guide

Module 4G4282-49

Module 4G4202-72



Electrical Hazard: Only qualified personnel should perform installation procedures.

Riesgo Electrico: Solamente personal calificado debe realizar procedimientos de instalacion.

Elektrischer Gefahrenhinweis: Installationen sollten nur durch ausgebildetes und qualifiziertes Personal vorgenommen werden.

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This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment uses, generates, and can radiate radio frequency energy and if not installed in accordance with the operator's manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense.

WARNING: Changes or modifications made to this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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This digital apparatus does not exceed the class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Class A ITE Notice

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Clase A. Aviso de ITE

ADVERTENCIA: Este es un producto de Clase A. En un ambiente doméstico este producto puede causar interferencia de radio en cuyo caso puede ser requerido tomar medidas adecuadas.

Klasse A ITE Anmerkung

WARNHINWEIS: Dieses Produkt zählt zur Klasse A (Industriebereich). In Wohnbereichen kann es hierdurch zu Funkstörungen kommen, daher sollten angemessene Vorkehrungen zum Schutz getroffen werden.

Product Safety

This product complies with the following: UL 60950, CSA C22.2 No. 60950, 2006/95/EC, EN 60950, IEC 60950, EN 60825, 21 CFR 1040.10.

Seguridad del Producto

El producto de Enterasys cumple con lo siguiente: UL 60950, CSA C22.2 No. 60950, 2006/95/EC, EN 60950, IEC 60950, EN 60825, 21 CFR 1040.10.

Produktsicherheit

Dieses Produkt entspricht den folgenden Richtlinien: UL 60950, CSA C22.2 No. 60950, 2006/95/EC, EN 60950, IEC 60950, EN 60825, 21 CFR 1040.10.

Electromagnetic Compatibility (EMC)

This product complies with the following: 47 CFR Parts 2 and 15, CSA C108.8, 2004/108/EC, EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55024, AS/NZS CISPR 22, VCCI V-3.

Compatibilidad Electromagnética (EMC)

Este producto de Enterasys cumple con lo siguiente: 47 CFR Partes 2 y 15, CSA C108.8, 2004/108/EC, EN 55022, EN 55024, EN 61000-3-2, EN 61000-3-3, AS/NZS CISPR 22, VCCI V-3.

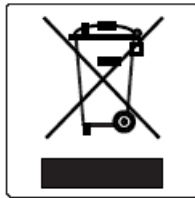
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This product complies with the requirements of European Directive, 2002/95/EC, Restriction of Hazardous Substances (RoHS) in Electrical and Electronic Equipment.

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In accordance with Directive 2002/96/EC of the European Parliament on waste electrical and electronic equipment (WEEE):

1. The symbol above indicates that separate collection of electrical and electronic equipment is required and that this product was placed on the European market after August 13, 2005, the date of enforcement for Directive 2002/96/EC.
2. When this product has reached the end of its serviceable life, it cannot be disposed of as unsorted municipal waste. It must be collected and treated separately.
3. It has been determined by the European Parliament that there are potential negative effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment.
4. It is the users' responsibility to utilize the available collection system to ensure WEEE is properly treated.

For information about the available collection system, please go to www.enterasys.com/support/ or contact

产品说明书附件 Supplement to Product Instructions

部件名称 (Parts)	有毒有害物质或元素 (Hazardous Substance)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr ⁶⁺)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
金属部件 (Metal Parts)	×	○	○	×	○	○
电路模块 (Circuit Modules)	×	○	○	×	○	○
电缆及电缆组件 (Cables & Cable Assemblies)	×	○	○	×	○	○
塑料和聚合物部件 (Plastic and Polymeric parts)	○	○	○	○	○	×
电路开关 (Circuit Breakers)	○	○	×	×	○	○

○： 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。
Indicates that the concentration of the hazardous substance in all homogeneous materials in the parts is below the relevant threshold of the SJ/T 11363-2006 standard.

×： 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T 11363-2006 标准规定的限量要求。
Indicates that the concentration of the hazardous substance of at least one of all homogeneous materials in the parts is above the relevant threshold of the SJ/T 11363-2006 standard.

对销售之日的所售产品, 本表显示,

凯创供应链的电子信息产品可能包含这些物质。注意: 在所售产品中可能会也可能不会含有所有所列的部件。

This table shows where these substances may be found in the supply chain of Enterasys' electronic information products, as of the date of sale of the enclosed product. Note that some of the component types listed above may or may not be a part of the enclosed product.

除非另外特别的标注, 此标志为针对所涉及产品的环保使用期标志。某些零部件会有一个不同的环保使用期(例如, 电池单元模块)贴在其产品上。

此环保使用期限只适用于产品是在产品手册中所规定的条件下工作。

The Environmentally Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here, unless otherwise marked. Certain parts may have a different EFUP (for example, battery modules) and so are marked to reflect such. The Environmentally Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.



VCCI Notice

This is a class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

BSMI EMC Statement — Taiwan

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Safety Information

Class 1 Laser Transceivers

**The single mode interface modules use Class 1 laser transceivers.
Read the following safety information before installing or operating these modules.**

The Class 1 laser transceivers use an optical feedback loop to maintain Class 1 operation limits. This control loop eliminates the need for maintenance checks or adjustments. The output is factory set, and does not allow any user adjustment. Class 1 Laser transceivers comply with the following safety standards:

- 21 CFR 1040.10 and 1040.11 U.S. Department of Health and Human Services (FDA).
- IEC Publication 825 (International Electrotechnical Commission).
- CENELEC EN 60825 (European Committee for Electrotechnical Standardization).

When operating within their performance limitations, laser transceiver output meets the Class 1 accessible emission limit of all three standards. Class 1 levels of laser radiation are not considered hazardous.

When the connector is in place, all laser radiation remains within the fiber. The maximum amount of radiant power exiting the fiber (under normal conditions) is -12.6 dBm or 55×10^{-6} watts.

Removing the optical connector from the transceiver allows laser radiation to emit directly from the optical port. The maximum radiance from the optical port (under worst case conditions) is 0.8 W cm^{-2} or $8 \times 10^3 \text{ W m}^2 \text{ sr}^{-1}$.

Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.

Declaration of Conformity

Application of Council Directive(s): **2004/108/EC
2006/95/EC**

Manufacturer's Name: **Enterasys Networks, Inc.**

Manufacturer's Address: **50 Minuteman Road
Andover, MA 01810
USA**

European Representative Address: **Enterasys Networks, Ltd.
Nexus House, Newbury Business Park
London Road, Newbury
Berkshire RG14 2PZ, England**

Conformance to Directive(s)/Product Standards: **EC Directive 2004/108/EC
EN 55022
EN 61000-3-2
EN 61000-3-3
EN 55024
EC Directive 2006/95/EC
EN 60950
EN 60825**

Equipment Type/Environment: **Networking Equipment, for use in a Commercial
or Light Industrial Environment.**

Enterasys Networks, Inc. declares that the equipment packaged with this notice conforms to the above directives.

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About This Guide

This guide provides an overview, installation and troubleshooting instructions, and specifications for the Enterasys Matrix® DFE-Gold (Distributed Forwarding Engine) 4G4202-72 and 4G4282-49 modules, the 7G-6MGBIC and 7G-6MGBIC-A optional Ethernet interface modules, and the Mini-GBIC modules.

For information about the CLI (Command Line Interface) set of commands used to configure and manage the DFE-Gold modules, refer to the Enterasys Networks *Matrix DFE-Gold Series Configuration Guide*.



Note: In this guide, the following terms are used:

- *DFE-Gold module* refers to the 4G4202-72 and 4G4282-49. If the information applies to only one of the modules, the module is referred to by its model number (such as 4G4282-49).
- *Ethernet interface module* (or simply *interface module*) refers to an optional uplink card installed on the main logic board and accessible through the option slot of the 4G4282-49.
- *Mini-GBIC* (Mini-Gigabit Interface Card) refers to a smaller optional interface card that plugs into the 7G-6MGBIC or 7G-6MGBIC-A interface module.

Important Notice

Depending on the firmware version used in the DFE-Gold module, some features described in this document may not be supported. Refer to the Release Notes shipped with the DFE-Gold module to determine which features are supported.

Who Should Use This Guide



Electrical Hazard: Only qualified personnel should perform installation procedures.

Riesgo Electrico: Solamente personal calificado debe realizar procedimientos de instalacion.

Elektrischer Gefahrenhinweis: Installationen sollten nur durch ausgebildetes und qualifiziertes Personal vorgenommen werden.

This guide is intended for a network administrator responsible for installing and setting up the DFE-Gold modules.

How to Use This Guide

Read through this guide completely to familiarize yourself with its contents and to gain an understanding of the features and capabilities of the DFE-Gold modules. A general working knowledge of data communications networks is helpful when setting up these modules.

This preface provides an overview of this guide and the DFE-Gold Series manual set, a brief summary of each chapter, and defines the conventions used in this document. To locate information about various subjects in this guide, refer to the following table.

For...	Refer to...
An overview of the DFE-Gold modules and instructions to obtain technical support from Enterasys Networks	Chapter 1, Introduction
Network requirements that must be met before installing the DFE-Gold modules	Chapter 2, Network Requirements
Instructions to install the DFE-Gold module hardware and optional Ethernet interface module and Mini-GBIC interface cards	Chapter 3, Installation
Troubleshooting installation problems and diagnosing network/operational problems using the LANVIEW LEDs	Chapter 4, Troubleshooting
Specifications, environmental requirements, and physical properties of the DFE-Gold modules, the optional 7G-6MGBIC and 7G-6MGBIC-A Ethernet interface modules, and Mini-GBIC interface cards	Appendix A, Specifications
Instructions to set the mode switches when necessary and remove/replace DRAM SIMM and DIMM memory	Appendix B, Mode Switch Bank Settings and Optional Installations

Related Documents

The manuals listed below can be obtained from the World Wide Web in Adobe Acrobat Portable Document Format (PDF) at the following site:

<http://www.enterasys.com/support/manuals>

- *Matrix DFE-Gold Series Configuration Guide* provides information on how to use the Command Line Interface to set up and manage the DFE-Gold modules.
- *Cabling Guide* provides information on dB loss and cable specifications.

Unlike the *Matrix DFE-Gold Series Configuration Guide*, the *Cabling Guide* is not listed alphabetically on the web site. Instead, it is listed under the *Overview Guides* link.

Conventions Used in This Guide

The following conventions are used in this guide.



Note: Calls the reader's attention to any item of information that may be of special importance.



Caution: Contains information essential to avoid damage to the equipment.

Precaución: Contiene información esencial para prevenir dañar el equipo.

Achtung: Verweist auf wichtige Informationen zum Schutz gegen Beschädigungen.



Electrical Hazard: Warns against an action that could result in personal injury or death due to an electrical hazard.

Riesgo Eléctrico: Advierte contra una acción que pudiera resultar en lesión corporal o la muerte debido a un riesgo eléctrico.

Elektrischer Gefahrenhinweis: Warnung vor sämtlichen Handlungen, die zu Verletzung von Personen oder Todesfällen – hervorgerufen durch elektrische Spannung – führen können!



Warning: Warns against an action that could result in personal injury or death.

Advertencia: Advierte contra una acción que pudiera resultar en lesión corporal o la muerte.

Warnhinweis: Warnung vor Handlungen, die zu Verletzung von Personen oder gar Todesfällen führen können!

Lowercase x: Indicates the general use of an alphanumeric character (for example, 6x1xx, the x's indicate a combination of numbers or letters).

Introduction

This chapter provides an overview of the DFE-Gold module capabilities, and introduces the 4G4202-72 and 4G4282-49 DFE-Gold modules and the optional uplink interface 7G-6MGBIC-A.

Important Notice

Depending on the firmware version used in the DFE-Gold module, some features described in this document may not be supported. Refer to the Release Notes shipped with the DFE-Gold module to determine which features are supported.

For information about...	Refer to page...
Overview of DFE Series Capabilities	1-2
The DFE-Gold Modules and Interface Options	1-2
Connectivity	1-6
Management	1-6
Standards Compatibility	1-7
Secure Networks Policy Support	1-7
LANVIEW Diagnostic LEDs	1-8
Getting Help	1-8

Overview of DFE Series Capabilities

The DFE-Gold Series modules provide you with a large number of capabilities, including:

- Support for high speed Gigabit Ethernet traffic to desktop devices
- Better security and service-delivery capabilities at the edge of the network
- A highly scalable and fault tolerant switch infrastructure
- Support for new applications, including those that have special requirements, such as:
 - Voice over IP (VoIP)
 - Video
 - New business improvement applications for Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) (also known as Enterprise Resource Management)

The DFE-Gold Modules and Interface Options

This section provides an overview of DFE-Gold modules 4G4202-72 and 4G4282-49 (Figure 1-1) and the 7G-6MGBIC and 7G-6MGBIC-A Ethernet interface modules (Figure 1-2).

Each of the fixed front panel ports can operate in either half-duplex or full-duplex mode of operation. The duplex mode can be determined by either auto-negotiation or manual configuration.

The DFE-Gold module ports can be configured to control traffic by limiting the rate of traffic accepted into the module and prioritizing traffic to expedite the flow of higher priority traffic through the module.

The DFE-Gold module receives power and backplane connectivity when it is inserted into the Matrix N1, Matrix N3, Matrix N5, Matrix N7, or Matrix E7 chassis.



Caution: Regardless of which chassis is used, the chassis system must be dedicated to DFE-Gold modules (4xxxxx) only. Do not insert 7xxxxx modules or other legacy modules into the same chassis with 4xxxxx modules as this will render the chassis inoperable.

Precaución: Cualquiera que sea el chasis que utilice, recuerde que el sistema debe aplicarse exclusivamente a los módulos DFE (Distributed Forwarding Engine) de la serie Gold (4xxxxx). No inserte módulos 7xxxxx ni otros módulos legado dentro de un chasis con módulos 4xxxxx. Si lo hace, el chasis no funcionará.

The information concerning the DFE module features and how to configure them to a network are provided in the *Matrix DFE-Gold Series Configuration Guide*.

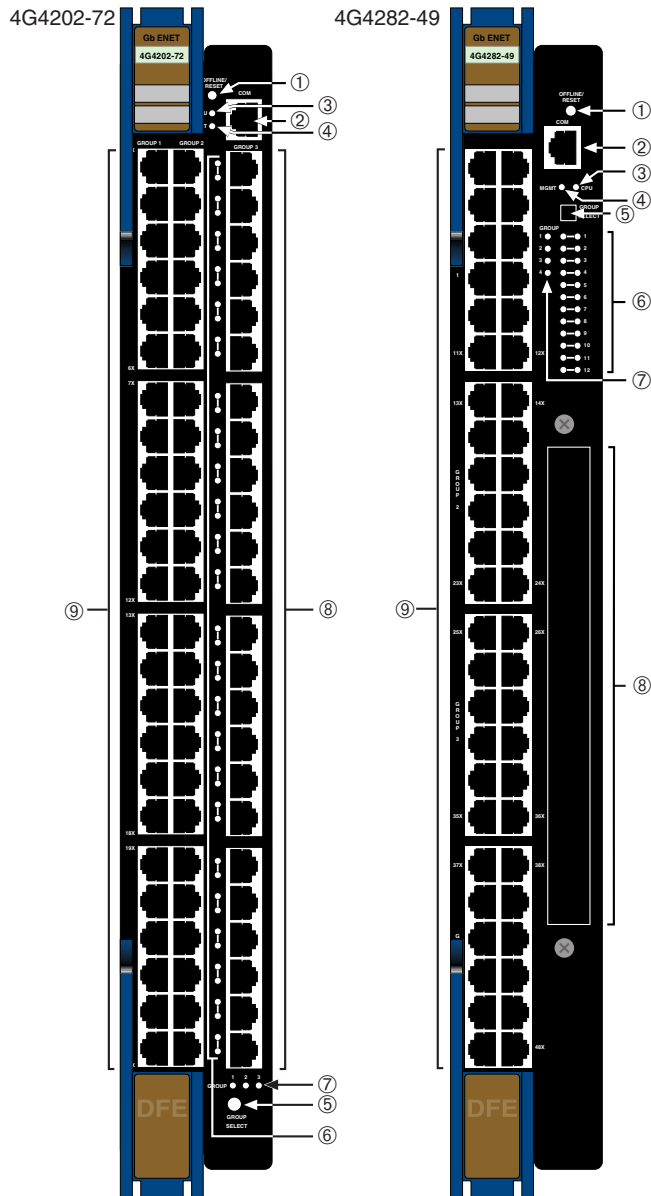
4G4202-72

The 4G4202-72 is an edge-network switch with 72, 10BASE-T/100BASE-TX/1000BASE-T ports accessed through 72 front-panel RJ45 connectors.

4G4282-49

The 4G4282-49 is an edge-network switch with 48, 10BASE-T/100BASE-TX/1000BASE-T compliant ports accessed through 48 fixed front-panel RJ45 connectors and a slot for an optional network expansion module. The 7G-6MGBIC and 7G-6MGBIC-A can support up to 6 Gigabit ports by means of optional Mini-GBICs.

Figure 1-1 4G4202-72 and 4G4282-49 DFE-Gold Modules

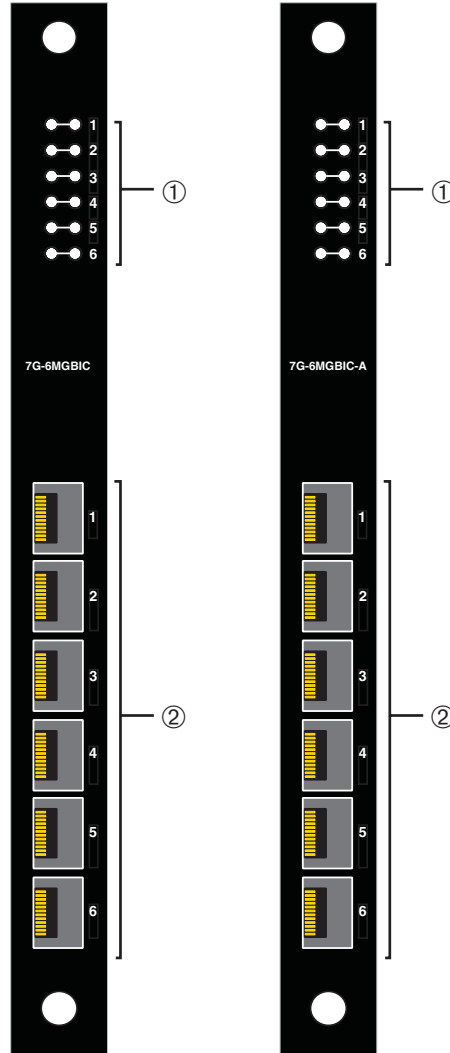


- | | |
|---------------------------|--|
| 1 OFFLINE/RESET switch | 6 GROUP status LEDs |
| 2 RJ45 COM (Console Port) | 7 GROUP selected LEDs |
| 3 CPU LED | 8 4G4202-72 - Ports (49-72), 10/100/1000 Mbps, via 24 RJ45s |
| 4 MGMT LED | 4G4282-49 - Ethernet Interface Module option slot |
| 5 GROUP SELECT button | 9 Ports (1-48), 10/100/1000 Mbps, via 48 RJ45s |

7G-6MGBIC and 7G-6MGBIC-A Gigabit Ethernet Interface Modules

The 4G4282-49 option slot provides access to an installed network expansion module such as the 7G-6MGBIC and 7G-6MGBIC-A shown in [Figure 1-2](#). [Table 1-1](#) indicates the standards the modules comply with and the type of physical connections.

Figure 1-2 Optional 7G-6MGBIC and 7G-6MGBIC-A Ethernet Interface Modules



1 Port status LEDs

2 1-Gigabit port slots for Mini-GBIC uplinks

Table 1-1 Optional Ethernet Interface Modules, Compliance, and Physical Connections

Ethernet Interface Module	Compliant to	Physical Connection
7G-6MGBIC-A	1-Gigabit Ethernet	Six port slots that support optional hot-swappable Mini-GBICs.
7G-6MGBIC	1-Gigabit Ethernet	Six port slots that support optional hot-swappable Mini-GBICs.

Connectivity

4G4202-72

The 4G4202-72 has 10BASE-T/100BASE-TX/1000BASE-T compliant ports through 72, fixed RJ45 front panel connectors.

4G4282-49

Depending on how the 4G4282-49 ([Figure 1-1](#)) is configured, it can support up to

- 48, 10BASE-T/100BASE-TX/1000BASE-T switched ports connected through 48, fixed RJ45 front panel connectors, or
- 48, 10BASE-T/100BASE-TX/1000BASE-T switched ports plus an optional Gigabit expansion uplink module.

Management

Management of the module can be either in-band or out-of-band. In-band remote management is possible using Telnet, Enterasys Networks' NetSight[®] management application, or WebView[™] application. Out-of-band management is provided through the RJ45 COM (Communication) port on the front panel using a VT100 terminal or a VT100 terminal emulator.

Switch Configuration Using WebView

Enterasys Networks' HTTP-based Web management application (WebView) is an intuitive web tool for simple management tasks.

Switch Configuration Using CLI Commands

The CLI commands enable you to perform more complete switch configuration management tasks.

For CLI command set information and how to configure the module, refer to the *Matrix DFE-Gold Series Configuration Guide*.

Standards Compatibility

The DFE-Gold modules are fully compliant with the IEEE 802.3-2002, 802.3ae-2002, 802.1D-1998, and 802.1Q-1998 standards. The DFE-Gold modules provide IEEE 802.1D-1998 Spanning Tree Algorithm (STA) support to enhance the overall reliability of the network and protect against “loop” conditions.

Secure Networks Policy Support

A fundamental concept that is key to the implementation of the Enterasys Secure Networks methodology is policy-enabled networking. This approach provides users of the network with the resources they need—in a secure fashion—while at the same time denying access to applications or protocols that are deemed inappropriate based on the user’s function within the organization. By adopting such a “user-personalized” model, it is possible for business policies to be the guidelines in establishing the technology architecture of the enterprise. Two major objectives are achieved in this way: IT services are matched appropriately with individual users; and the network itself becomes an active participant in the organization’s security strategy. The Secure Networks architecture consists of three tiers:

- Classification rules make up the first or bottom tier. The rules apply to devices in the Secure Networks environment, such as switches and routers. The rules are designed to be implemented at or near the user’s point of entry to the network. Rules may be written based on criteria defined in the Layer 2, Layer 3, or Layer 4 information of the data frame.
- The middle tier is Services, which are collections of individual classification rules, grouped logically to either permit or deny access to protocols or applications based on the user’s role within the organization. Priority and bandwidth rate limiting may also be defined in services.
- Roles, or behavioral profiles, make up the top tier. The roles assign services to various business functions or departments, such as executive, sales, and engineering.

To enhance security and deliver a true policy-based infrastructure, the Enterasys Secure Networks methodology can take advantage of authentication methods, such as 802.1X, using EAP-TLS, EAP-TTLS, or PEAP, as well as other types of authentication. Authorization information, attached to the authentication response, determines the application of policy. Authorization information is communicated by means of the policy

name in a RADIUS Filter-ID attribute. An administrator can also define a role to be implemented in the absence of an authentication framework. Refer to the release notes shipped with the module for details.

LANVIEW Diagnostic LEDs

LANVIEW diagnostic LEDs serve as an important troubleshooting aid by providing an easy way to observe the status of individual ports and overall network operations.

Getting Help

For additional support related to the modules or this document, contact Enterasys Networks using one of the following methods:

World Wide Web	www.enterasys.com/services/support/
Phone	1-800-872-8440 (toll-free in U.S. and Canada) or 1-978-684-1000 For the Enterasys Networks Support toll-free number in your country: www.enterasys.com/services/support/contact/
Internet mail	support@enterasys.com To expedite your message, type [N-SERIES] in the subject line.

To send comments concerning this document to the Technical Publications Department:
techpubs@enterasys.com

Please include the document Part Number in your email message.

Before contacting Enterasys Networks for technical support, have the following information ready:

- Your Enterasys Networks service contract number
- A description of the failure
- A description of any actions already taken to resolve the problem (for example, changing mode switch settings or rebooting the unit)
- The serial and revision numbers of all involved Enterasys Networks products in the network
- A description of your network environment (such as layout, cable type)
- Network load and frame size at the time of trouble (if known)
- The device history (for example, have you returned the device before, is this a recurring problem)
- Any previous Return Material Authorization (RMA) numbers

Network Requirements

This chapter provides information concerning the network requirements that must be met to ensure a satisfactory performance from the DFE module. The information consists of the following:

For information about...	Refer to page...
Link Aggregation	2-1
10BASE-T Network	2-2
100BASE-TX Network	2-2
1000BASE-SX/LX/ELX Network	2-2
1000BASE-T Network	2-3



Note: The *Matrix DFE-Gold Series Configuration Guide* and the Cabling Guide referred to in the following sections can be found on the Enterasys Networks World Wide Web site: <http://www.enterasys.com/support/manuals>.

Refer to “[Related Documents](#)” on page xiv for more information.

Link Aggregation

Link Aggregation is a method of grouping multiple physical ports on a network device into one logical link according to the IEEE 802.3ad-2002 standard. Because Link Aggregation is standards based, it allows for automatic configuration with manual overrides (if applicable), and can operate on 10 Mbps, 100 Mbps, or 1000 Mbps Ethernet full duplex ports. Thus the network administrator can combine a group of five 100 Mbps ports into a logical link (trunk) that functions as a single 500 Mbps port. Once the modules agree on which ports are in the trunk, Spanning Tree can treat these multiple physical links as a single logical port, eliminating a looping condition among the aggregated links.

In normal usage (and typical implementations) there is no need to enable/disable ports for Link Aggregation. The default values will result in the maximum number of aggregations possible. If the switch is placed in a configuration with its peers not running the protocol, no aggregations will be formed and the modules will function normally (that is, Spanning Tree will block redundant paths).

For details about the commands involved with configuring the Link Aggregation function, refer to the *Matrix DFE-Gold Series Configuration Guide*.

10BASE-T Network

When connecting a 10BASE-T segment to any of the fixed front panel ports of the 4G4202-72 or 4G4282-49, ensure that the network meets the Ethernet network requirements of the IEEE 802.3-2002 standard for 10BASE-T. Refer to the *Cabling Guide* for details.



Note: If a port is to operate at 100 Mbps, Category 5 cabling must be used. Category 3 cabling does not meet 100 Mbps specifications. For 10 Mbps operation only, Category 3 or Category 5 cabling can be used. Refer to “[100BASE-TX Network](#)” on page 2-2 for information about 100BASE-TX networks and cabling.

100BASE-TX Network

The fixed front panel ports of the 4G4202-72 or 4G4282-49 provide a connection that supports Category 5 UTP cabling. The device at the other end of the twisted pair segment must meet IEEE 802.3-2002 100BASE-TX Fast Ethernet network requirements for the devices to operate at 100 Mbps. Refer to the *Cabling Guide* for details.



Note: The fixed ports of the module support Category 5 UTP cabling with an impedance between 85 and 111 ohms for 100 Mbps operation. The module is capable of operating at 10, 100, or 1000 Mbps and can automatically sense the port speed of the other device and adjust its speed accordingly.

1000BASE-SX/LX/ELX Network

The optional Mini-GBICs provide a Gigabit Ethernet connection to the optional 7G-6MGBIC-A interface module to provide fiber-optic connections operating at 1000 Mbps (1 Gbps). Other Mini-GBICs may support different types of cabling connections. The device at the other end of the fiber-optic connection must meet IEEE 802.3-2002 Gigabit Ethernet requirements for the devices to operate at Gigabit speed. Refer to [Appendix A](#) for further details on Mini-GBIC specifications.

1000BASE-T Network

The 4G4202-72 and 4G4282-49 support 10/100/1000 Mbps by means of fixed RJ45 front panel connectors. These connections support copper wire connections that can operate up to 1000 Mbps. The device at the other end of the twisted pair segment must meet IEEE 802.3-2002 network requirements for the devices to operate at Gigabit speed.



Note: The fixed ports of each module support Category 5 UTP cabling with an impedance between 85 and 111 ohms for 100 and 1000 Mbps operation and can automatically sense the port speed of the other device and adjusts its speed accordingly.

Installation



Electrical Hazard: Only qualified personnel should perform installation procedures.

Riesgo Electrico: Solamente personal calificado debe realizar procedimientos de instalacion.

Elektrischer Gefahrenhinweis: Installationen sollten nur durch ausgebildetes und qualifiziertes Personal vorgenommen werden.

Important Notice

Read the Release Notes shipped with the DFE-Gold module to check for any exceptions to the supported features and operation documented in this guide.

This chapter provides the instructions to install the 4G4202-72 and 4G4282-49 DFE-Gold modules, and an optional network expansion module.



Note: Unless otherwise noted, the installation instructions apply to both DFE-Gold modules.

A Phillips screwdriver is needed to install the optional network expansion module into the 4G4282-49. Follow the order of the sections listed below to correctly install the modules.

For information about...	Refer to page...
Unpacking the DFE-Gold Module	3-2
Installing Optional Network Expansion Modules	3-2
Installing an Optional Mini-GBIC	3-5
Module Placement and Rules	3-9
Installing the DFE Module into a Chassis	3-11
Connecting to the Network	3-15
Connecting to COM Port for Local Management	3-23

For information about...	Refer to page...
Completing the Installation	3-29

Unpacking the DFE-Gold Module

Unpack the DFE-Gold module as follows:

1. Open the box and remove the packing material protecting the DFE-Gold module.
2. Verify the contents of the carton as listed in [Table 3-1](#).

Table 3-1 Contents of DFE-Gold Module Carton

Item	Quantity
DFE-Gold module (4G4202-72 or 4G4282-49)	1
This Installation Guide	1
Customer Release Notes	1

3. Remove the tape seal on the non-conductive bag to remove the DFE module.
4. Perform a visual inspection of the DFE-Gold module for any signs of physical damage. Contact Enterasys Networks if there are any signs of damage. Refer to [“Getting Help”](#) on page 1-8 for details.

Installing Optional Network Expansion Modules



Note: Install any optional equipment before proceeding to [“Module Placement and Rules”](#) on page 3-9 for an explanation of the rules to install different series modules in a Matrix E7 chassis.

Installing a network expansion module involves

- removing the coverplate from the DFE-Gold module,
- attaching the network expansion module to the DFE-Gold module, and
- if required, installing the Mini-GBICs.



Caution: An antistatic wrist strap is required to perform the following procedures to minimize ESD damage to the devices involved.

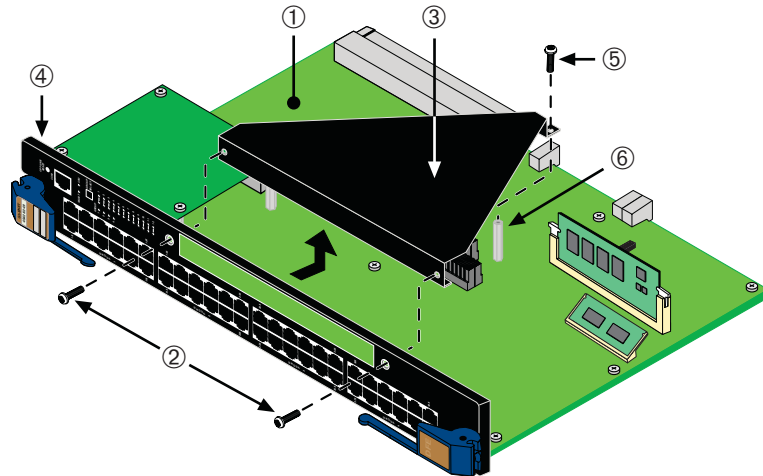
Precaución: Para minimizar los efectos de las descargas de electricidad estática, deberá utilizar una pulsera antiestática al realizar los siguiente procedimientos.

Removing the Coverplate

Refer to [Figure 3-1](#) and proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions on the antistatic wrist strap package).
2. Place the DFE-Gold module on an antistatic pad on a sturdy flat surface.

Figure 3-1 Removing the Coverplate



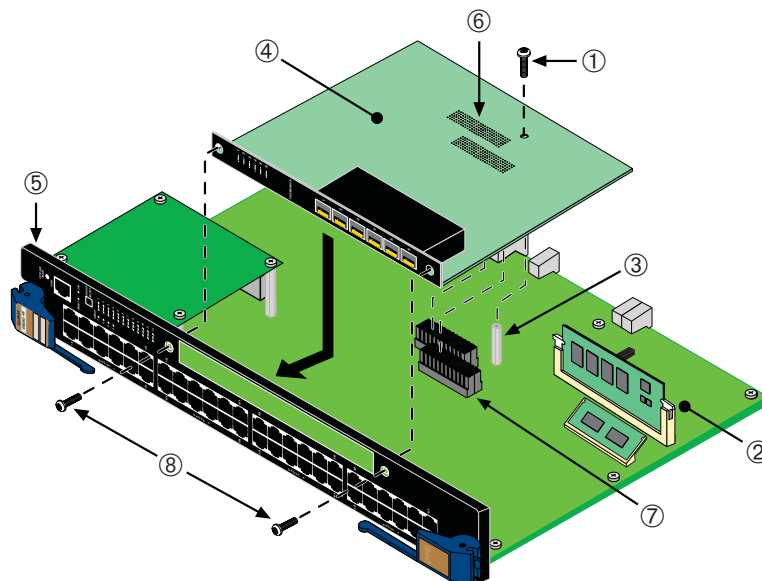
- | | |
|-------------------------------------|--------------------------|
| 1 Main board | 4 DFE Module front panel |
| 2 Front panel coverplate screws (2) | 5 Standoff screw |
| 3 Coverplate | 6 Standoff |

3. Remove and save the two coverplate screws fastening the coverplate to the DFE-Gold module front panel.
4. Remove and save the screw fastening the coverplate to the standoff on the main board.
5. Lift and remove the coverplate from the module and save for possible future use.

Installing the Network Expansion Module

Refer to [Figure 3-2](#) and proceed as follows:

1. Carefully align the two network expansion module connectors with the main board connectors. Then press straight down over the two network expansion module connectors, applying pressure until they are properly seated.

Figure 3-2 Installing the Network Expansion Module

- | | | |
|--------------|-------------------------------|-------------------------|
| 1 Screw (1) | 4 Optional expansion module | 7 Main board connectors |
| 2 Main board | 5 DFE-Gold module front panel | 8 Coverplate screws (2) |
| 3 Standoff | 6 Expansion module connectors | |

2. Use the two saved coverplate screws to fasten the network expansion module to the DFE-Gold module front panel. Do not tighten the two coverplate screws at this time.
3. Use the saved screw from the standoff to fasten the network expansion module to the standoff. Tighten the screw.
4. Tighten the two front-panel coverplate screws.
5. This completes the network expansion module installation. To install Mini-GBICs into the network expansion module, proceed to [“Installing an Optional Mini-GBIC”](#) on page 3-5 for the Mini-GBIC installation instructions. Otherwise, proceed to [“Module Placement and Rules”](#) on page 3-9 to install the DFE module into the chassis.

Installing an Optional Mini-GBIC

This section describes how to install a Mini-GBIC in an optional 7G-6MGBIC or 7G-6MGBIC-A.



Warning: Fiber-optic Mini-GBICs use Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.

Advertencia: Los Mini-GBICs de fibra optica usan lasers de clase 1. No se debe usar instrumentos opticos para ver la potencia laser El uso de los instrumentos opticos para ver la potencia laser incrementa el riesgo a los ojos. Cuando vean el puerto de la potencia optica, la corriente debe ser removida del adaptador de la red.

Warnhinweis: Mini-GBICs mit Fiber-Optik Technologie benutzen Laser der Klasse 1. Benutzen sie keinesfalls optische Hilfsmittel, um die Funktion des Lasers zu überprüfen. Solche Hilfsmittel erhöhen die Gefahr von Sehschäden. Wenn sie den optischen Port überprüfen möchten stellen Sie sicher, dass die Komponente von der Spannungsversorgung getrennt ist.



Caution: Carefully follow the instructions in this manual to avoid damaging the Mini-GBIC, Ethernet interface module, and DFE module.

The Mini-GBIC, Ethernet interface module, and DFE module are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the Mini-GBIC, Ethernet interface module, and DFE module. Always leave the Mini-GBIC in the antistatic bag or an equivalent antistatic container when not installed.

Precaución: Siga las instrucciones del manual para no dañar el Mini-GBIC, la interface del módulo Ethernet ni el módulo DFE, puesto que son muy sensible a las descargas de electricidad estática. Utilice la pulsera antiestática y tome todas las precauciones necesarias durante este procedimiento. Si no lo hace, podría dañar el Mini-GBIC, la interface el módulo Ethernet o el módulo DFE. Mientras no esté instalado, mantenga el Mini-GBIC en su bolsa antiestática o en cualquier otro recipiente antiestático.

To prepare and install a Mini-GBIC, refer to [Figure 3-3](#), [Figure 3-4](#), or [Figure 3-5](#), as appropriate, and proceed as described in the following sections.

Preparation

Before installing the Mini-GBIC:

1. Attach the antistatic wrist strap (refer to the instructions in the antistatic wrist strap package) before removing the Mini-GBIC from the antistatic packaging.
2. Remove the Mini-GBIC from the packaging.
3. If there is a protective dust cover (see 5 in [Figure 3-3](#) or [Figure 3-4](#)) on the Mini-GBIC port, do not remove it at this time.

Installation

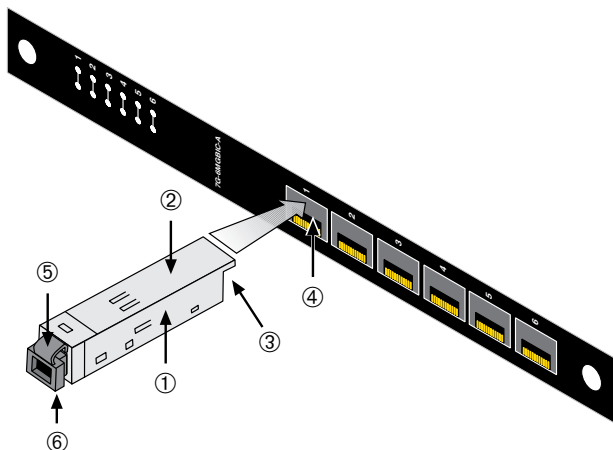
To install a Mini-GBIC with an MT-RJ connection, refer to [Figure 3-3](#). For an LC connection, refer to [Figure 3-4](#). For an RJ45 connection, refer to [Figure 3-5](#). Then proceed as described below.



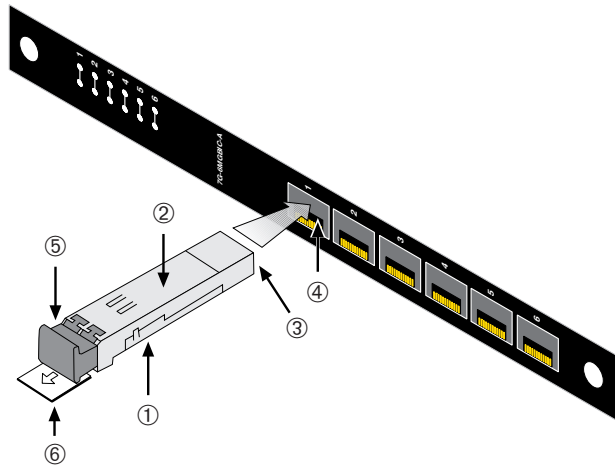
Note: If the Mini-GBIC is one with an RJ45 connector such as an MGBIC-02 ([Figure 3-5](#)), the installation procedure is the same as described below. However, the Mini-GBIC has a wire handle to release it.

1. Hold the Mini-GBIC with its top side facing up and its 7-pin edge connector facing the port slot.
2. Carefully align the Mini-GBIC with the port slot.
3. Push the Mini-GBIC into the port slot until the Mini-GBIC “clicks” and locks into place.

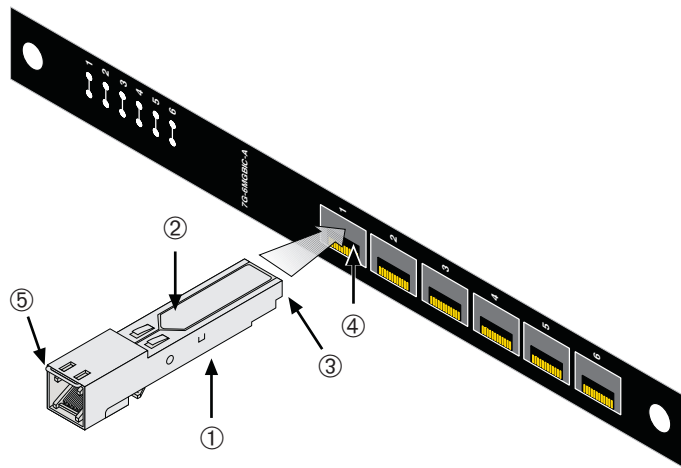
Figure 3-3 Mini-GBIC with MT-RJ Connector



- | | |
|---|------------------------------------|
| 1 Mini-GBIC (MGBIC-MT01) | 4 Port slot |
| 2 Mini-GBIC, top side | 5 Mini-GBIC, protective dust cover |
| 3 7-Pin edge connector (insertion side) | 6 Release tab |

Figure 3-4 Mini-GBIC with LC Connector

- | | |
|--|------------------------------------|
| 1 Mini-GBIC (MGBIC-08, -LC01, -LC03, or -LC09) | 4 Port slot |
| 2 Mini-GBIC, top side | 5 Mini-GBIC, protective dust cover |
| 3 7-Pin edge connector (insertion side) | 6 Release tab |

Figure 3-5 Mini-GBIC with RJ45 Connector

- | | |
|---|-----------------------|
| 1 Mini-GBIC (MGBIC-02) | 4 Port slot |
| 2 Mini-GBIC, top side | 5 Wire-handle release |
| 3 7-Pin edge connector (insertion side) | |

Removing the Mini-GBIC



Caution: Do NOT remove a Mini-GBIC from a slot without releasing the locking tab located at the front of the Mini-GBIC. This can damage the Mini-GBIC.

The Mini-GBIC and its host device are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damaging the Mini-GBIC or host device. Always leave the Mini-GBIC in the antistatic bag or an equivalent antistatic container when not installed.

Precaución: NO quite el Mini-GBIC de la ranura sin antes abrir la traba ubicada en la parte frontal del Mini-GBIC.

Si lo hace, puede dañar el Mini-GBIC, puesto que es muy sensible a las descargas de electricidad estática, al igual que el dispositivo host. Utilice la pulsera antiestática y tome todas las precauciones necesarias durante este procedimiento. Si no lo hace, puede dañar el Mini-GBIC o el dispositivo host. Mientras no esté instalado, mantenga el Mini-GBIC en su bolsa antiestática o en cualquier otro recipiente antiestático.

To remove a Mini-GBIC from a port slot, proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions in the antistatic wrist strap package) before removing the Mini-GBIC.
2. Remove the cables connected to the Mini-GBIC.
3. Release the Mini-GBIC from the port slot. Refer back to the appropriate figure listed below to locate the release mechanism and proceed as instructed.
 - For the type of Mini-GBIC shown in [Figure 3-3](#), push in on the release tab as far as it will go to release the Mini-GBIC.
 - For the type of Mini-GBIC shown in [Figure 3-4](#), pull out on the release tab to release the Mini-GBIC.
 - For the type of Mini-GBIC shown in [Figure 3-5](#), pull down on the wire handle to release the Mini-GBIC.
4. Grasp the sides of the Mini-GBIC and pull it straight out of the port slot.

If storing or shipping the Mini-GBIC, reinsert the Mini-GBIC dust cover to protect the end of the fiber-optic strands.

Module Placement and Rules



Note: It is important to follow the Module Placement and Rules to ensure proper operation.

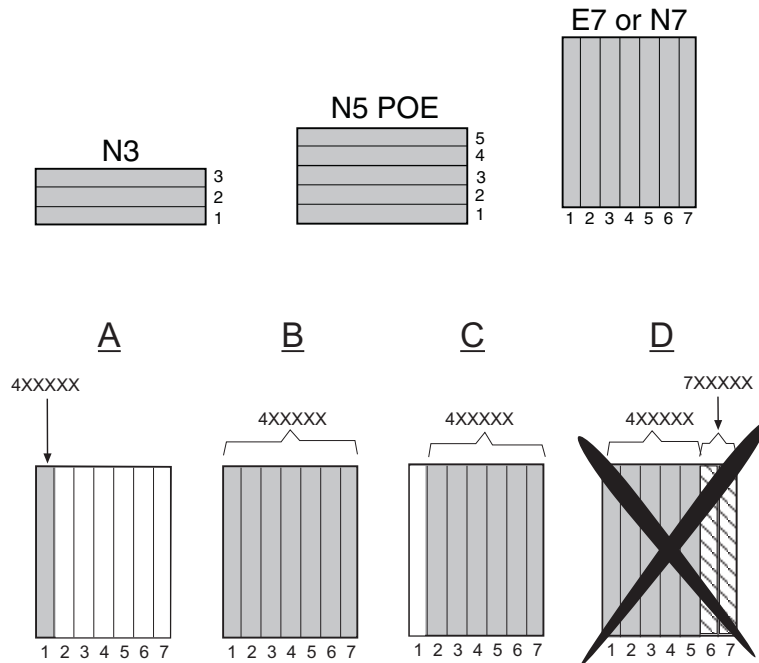
The DFE-Gold modules can be installed in a Matrix E7, Matrix N1, Matrix N3, Matrix N5, or Matrix N7 chassis. The slot locations in the Matrix E7, N3, N5, and N7 chassis are identified in [Figure 3-6](#) along with five module configuration examples.



Caution: Regardless of which chassis is used, the chassis system must be dedicated to DFE-Gold modules (4xxxxx) only. Do not insert 7xxxxx modules or other legacy modules into the same chassis with 4xxxxx modules as this will render the chassis inoperable.

Precaución: Cualquiera que sea el chasis que utilice, recuerde que el sistema debe aplicarse exclusivamente a los módulos DFE (Distributed Forwarding Engine) de la serie Gold (4xxxxx). No inserte módulos 7xxxxx ni otros módulos legado dentro de un chasis con módulos 4xxxxx. Si lo hace, el chasis no funcionará.

Figure 3-6 Examples, Slot Numbers/Module Placement in Matrix E7, N3, N5, or N7



To ensure proper operation of the system, consider the following examples and rules for module placement in either chassis.

Example 1 (Figure 3-6, A)

Shows one module installed in the chassis. If the chassis is populated with only one 4xxxxx, it must be installed in slot 1.

Rule: If only one 4xxxxx is installed in the chassis, it must be in slot 1. Always install a 4xxxxx in slot 1 of the chassis.

Example 2 (Figure 3-6, B)

Shows the chassis fully populated with 4xxxxx modules. All modules may be hot swapped, except the module in slot 1. If the module in slot 2 is designated as a redundant management module, the module in slot 1 may be hot swapped without shutting down the system. The module in slot 2 can be designated using the CLI command **set license** <license key>.

For information on how to use this command, refer to the *Matrix DFE-Gold Series Configuration Guide*. To access this guide on the web, refer to [“Related Documents”](#) on page xiv.

Without a designated redundant management module in slot 2, removing the module in slot 1 will shut down the system.

Rule: Any module in a 4xxxxx system, including the management module in slot 1, may be hot swapped when there is a 4xxxxx module designated as a redundant management module in slot 2.

Example 3 (Figure 3-6, C)

Shows the primary management module missing from slot 1. As long as the module installed in slot 2 is designated as a redundant management module, the module in slot 1 can be removed without affecting system operation. However, if there is no module in slot 1, and the system is powered down, it cannot be restarted without a module in slot 1.

Rule: You cannot power up the system completely without a module in slot 1.

Example 4 (Figure 3-6, D)

Shows a chassis populated with 4xxxxx and 7xxxxx modules. **DO NOT** install 4xxxxx and 7xxxxx modules in the same chassis. In a 4xxxxx system, the chassis must be dedicated to DFE-Gold modules only. The chassis will be rendered inoperable if any other type of module (DFE-Platinum or legacy modules, for example) are installed in the same chassis with DFE-Gold modules.

Rule: In a 4xxxxx system, the chassis must be populated with only 4xxxxx boards to operate.

Installing the DFE Module into a Chassis



Caution: Failure to observe static safety precautions could cause damage to the DFE module. Follow static safety handling rules and wear the antistatic wrist strap.

Do not cut the non-conductive bag to remove the module. Sharp objects contacting the board or components can cause damage.

Precaución: Si no toma las medidas de seguridad necesarias para evitar descargas de electricidad estática, es posible que el módulo se dañe. Siga los consejos de seguridad para la manipulación del producto y no olvide utilizar la pulsera antiestática.

No corte la bolsa antiestática para sacar el módulo. Tenga en cuenta que si algún objeto cortante entra en contacto con la placa o con los componentes, éstos podrían dañarse.

To install a DFE-Gold module into a chassis, proceed directly to “[Preparation](#)” on page 3-11 to start the installation process.

Preparation

1. Remove the blank panel covering the slot in which the module will be installed. All other slots must remain covered to ensure proper airflow for cooling. (Save the blank plate in the event you need to remove the module.)
2. Remove the module from the shipping box. (Save the box and packing materials in the event the module needs to be reshipped.)
3. Locate the antistatic wrist strap shipped with the chassis. Attach the antistatic wrist strap to your wrist and plug the cable from the antistatic wrist strap into the ESD grounding receptacle at the upper right corner of the chassis.
4. Remove the module from the plastic bag. (Save the bag in the event the module must be reshipped.) Observe all precautions to prevent damage from Electrostatic Discharge (ESD).
5. Examine the module for damage. If any damage exists, DO NOT install the module. Immediately contact Enterasys Networks. Refer to “[Getting Help](#)” on page 1-8.

Installing Module into Matrix E7 or N7 Chassis

To install the module, refer to [Figure 3-1](#) and proceed as follows:



Caution: To prevent damaging the backplane connectors in the following step, take care that the module slides in straight and properly engages the backplane connectors.

Ensure that the top lever lines up with the desired slot number located on the front panel of the chassis. Refer to [Figure 3-1](#).

Precaución: Para evitar que se dañen los conectores del panel posterior en el siguiente paso, intente deslizar el módulo en forma recta y verifique que se enganche correctamente en los conectores de panel posterior.

Asegúrese de que la palanca superior esté alineada con respecto al número de ranura correspondiente ubicado en el panel frontal del chasis. Consulte en [Figure 3-1](#).

1. Locate the chassis card guides that line up with the slot number in which the module will be installed. (In this example, slot 1 is being used.) Make sure the module locking levers are in the open position (top and bottom).
2. Align the module card between the upper and lower card guides of the desired slot and slide it into the chassis, taking care that the module slides in straight. See Caution below.



Caution: Due to the amount of force needed to properly seat the module connectors into the backplane connectors, it is best to apply force to the end of the levers to insert (or eject) the module. Otherwise, damage could result to the module and chassis.

Precaución: Para colocar los conectores del módulo en los conectores del panel posterior correctamente es necesario hacer bastante fuerza, por ello, para insertar o quitar el módulo, se recomienda concentrar la fuerza en el extremo de las palancas. Si no lo hace, podría dañar el módulo y el chasis.

3. Slide the module into the slot until you can engage the top and bottom locking levers with the chassis as shown in [Figure 3-1](#).

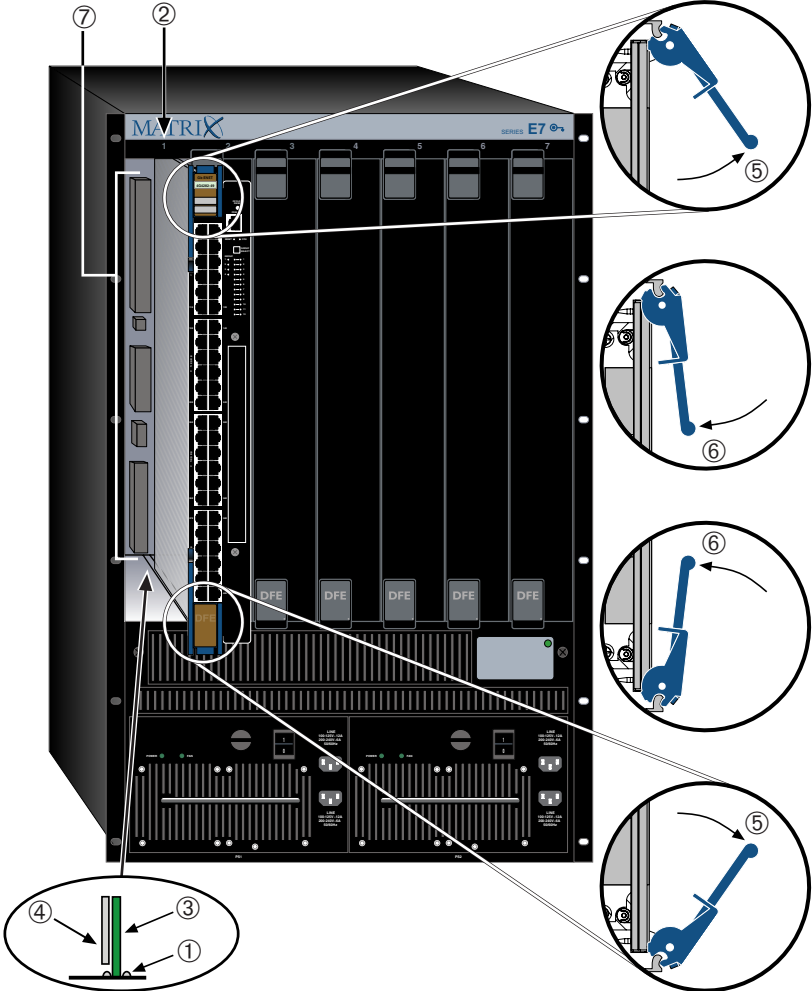


Caution: In step 4, do not force the locking levers to the point that they touch the face of the front panel. Forcing the locking levers to this point could damage the module and chassis.

Precaución: En el paso 4, tenga cuidado de no llevar las palancas de cierre a un punto en donde estén en contacto con el panel frontal. Si lo hace, podría dañar el módulo y/o el chasis.

4. Refer to the Caution note above, then rotate the two levers into the closed position.
5. If the chassis in which the module is installed was powered down for the installation, turn the power supplies on. Check to see that the module CPU LED settles at solid green after a few minutes. If the LED does not turn solid green, refer to [Chapter 4](#) for troubleshooting details.

Figure 3-1 Installing Module into Matrix E7 or Matrix N7 Chassis (E7 shown)



- 1 Card guides
- 2 Slot number 1 (Left-most slot is 1.)
- 3 Module card
- 4 Metal back panel
- 5 Upper/lower locking tabs (in proper open position)
- 6 Upper/lower locking tab (in closed position)
- 7 Backplane connectors (power and FTM2)

Installing Module into Matrix N1, N3, or N5 Chassis



Caution: Failure to observe static safety precautions could cause damage to the DFE module. Follow static safety handling rules and wear the antistatic wrist strap.

Do not cut the non-conductive bag to remove the module. Sharp objects contacting the board or components can cause damage.

Precaución: Si no toma las medidas de seguridad necesarias para evitar descargas de electricidad estática, es posible que el módulo se dañe. Siga los consejos de seguridad para la manipulación del producto y no olvide utilizar la pulsera antiestática.

No corte la bolsa antiestática para sacar el módulo. Tenga en cuenta que si algún objeto cortante entra en contacto con la placa o con los componentes, éstos podrían dañarse.

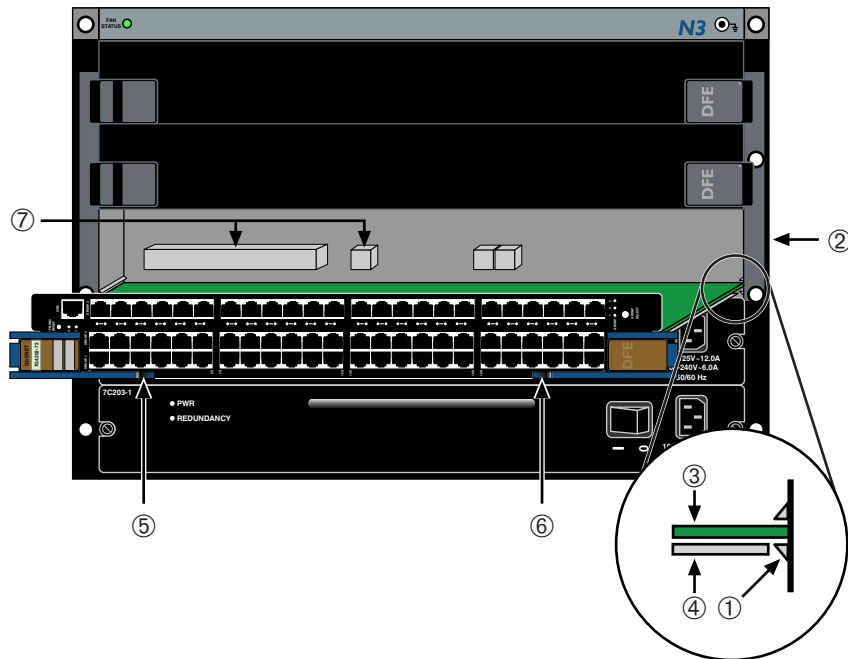
A DFE-Gold module can be installed in any available chassis slot (1 through 3) in the Matrix N3 chassis or slots 1 through 5 in the N5 chassis, or in the N1 chassis. All three chassis have horizontal slots for DFE-Series modules. To install the module into the Matrix N3, N5, or N1 chassis, refer to [Figure 3-7](#) and proceed as described in “[Installing the DFE Module into a Chassis](#)” on page 3-11.



Caution: When setting the locking levers to the closed position, do not try to force the locking levers to the point that they touch the face of the front panel. Forcing the locking levers to this point could damage the module and chassis.

Precaución: Al mover las palancas a la posición de cerrado, tenga cuidado de no llevarlas a un punto en donde estén en contacto con el panel frontal. Si lo hace, podría dañar el módulo o el chasis.

Figure 3-7 Installing Module into N1, N3, or N5 Chassis (only N3 shown)



- | | |
|--------------------------------|--|
| 1 Card guides | 5 Upper locking tab (shown in closed position) |
| 2 Slot 1 (Top slot is slot 3.) | 6 Lower locking tab (shown in closed position) |
| 3 Module card | 7 FTM2 backplane connectors |
| 4 Metal back panel | |

Connecting to the Network

This section provides the procedures for connecting unshielded twisted pair (UTP) segments from the network or other devices to the 4G4282-49 and 4G4202-72 (“[Connecting UTP Cables](#)” on page 3-16). For connections to Mini-GBIC ports on the 7G-6MGBIC or 7G-6MGBIC-A, refer to “[Connecting Fiber-Optic Cables to Mini-GBICs](#)” on page 3-20.



Note: If the DFE-Gold module is being installed in a network using Link Aggregation, there are rules concerning network cables and port configurations that must be followed for Link Aggregation to operate properly. Before connecting the cables, refer to the *Matrix DFE-Gold Series Configuration Guide* for the configuration information. For details on how to obtain manuals, refer to the “[Related Documents](#)” on page xiv.

Connecting UTP Cables

The fixed RJ45 front panel connections of the 4G4202-72 and 4G4282-49 are 10/100/1000 Mbps ports. These ports have internal crossovers, and also support automatic-polarity sensing when configured for automatic-negotiation.

If automatic-negotiation is not activated on a port, use a straight-through cable when connecting a workstation to the port. When connecting a networking device to the port, such as a bridge, repeater, or router, use a crossover cable.

If a port is set for auto-negotiation, automatic-polarity sensing is also activated. Automatic-polarity sensing eliminates the need for a crossover cable, whether the connection is to another network device or a workstation.



Note: All RJ45 front panel ports on the 4G4202-72 and 4G4282-49 support Category 5 Unshielded Twisted Pair (UTP) cabling with an impedance between 85 and 111 ohms. Category 3 cable may be used if the connection is going to be used only for 10 Mbps.

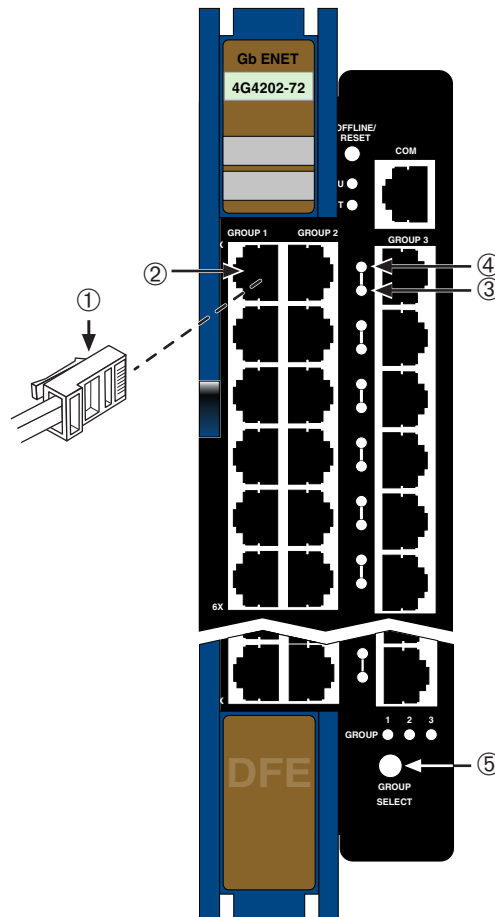
In this procedure, the 4G4202-72 is used as the example to connect a twisted pair segment to the module. It is also assumed that the chassis power is turned on to provide power to the module. Refer to [Figure 3-8](#) on page 3-17 and proceed as follows:

1. Ensure that the device connected to the other end of the segment is powered ON.
2. Connect the twisted pair segment to the module by inserting the RJ45 connector on the twisted pair segment into the appropriate RJ45 port connector.
3. Verify that a link exists by checking that the port RX (Receive) LED is ON (flashing amber, blinking green, or solid green). If the RX LED is OFF and the TX (Transmit) LED is not blinking amber, perform the following steps until it is on:
 - a. To view the receive and transmit activity on a group of segments, press the GROUP SELECT button (see [Figure 3-8](#) on page 3-17) to step to the group of interest (Groups 1 through 3 on the 4G4202-72, or Groups 1 through 5 on the 4G4282-49). Each time the GROUP SELECT button is pressed, a GROUP LED lights up in sequence, indicating which Group is selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each segment.
 - b. Verify that the cabling being used is Category 5 UTP with an impedance between 85 and 111 ohms. For the port to operate at 100 or 1000 Mbps, Category 5 cabling must be used and installed properly.
 - c. Verify that the device at the other end of the twisted pair segment is on and properly connected to the segment.
 - d. Verify that the RJ45 connectors on the twisted pair segment have the proper pinouts and check the cable for continuity. Typically, a crossover cable is used between network devices. A straight-through cable is used to connect between switches or hub devices and an end system (computer). Refer to [Figure 3-9](#) and

Figure 3-10 for four-wire RJ45 connections. Refer to Figure 3-11 and Figure 3-12 for eight-wire RJ45 connections.

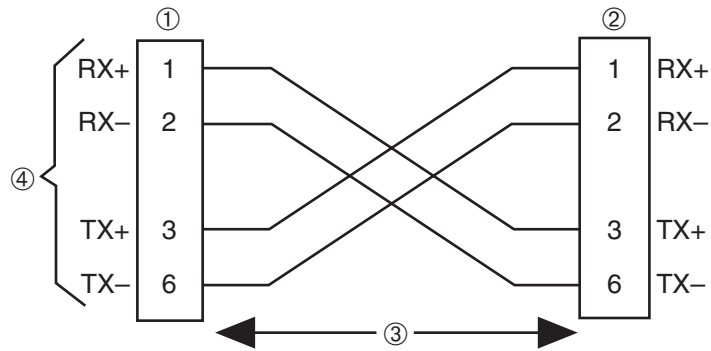
- e. Ensure that the twisted pair connection meets the dB loss and cable specifications outlined in the *Cabling Guide*. Refer to “[Related Documents](#)” on page xiv for information on obtaining this document. If a link is still not established, contact Enterasys Networks. Refer to “[Getting Help](#)” on page 1-8 for details.
4. Repeat steps 1 through 3 above, until all connections have been made.

Figure 3-8 Connecting a Twisted Pair Segment to the DFE-Gold Module



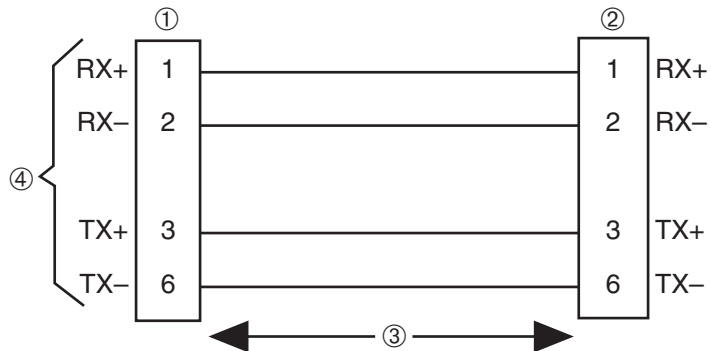
- | | | |
|--------------------------------|----------------------------|-----------------------|
| 1 RJ45 connector | 3 Transmit status (TX) LED | 5 GROUP SELECT button |
| 2 RJ45 port connector (port 1) | 4 Receive status (RX) LED | |

Figure 3-9 Crossover Four-Wire Cable RJ45 Pinouts, Connections Between Network Devices



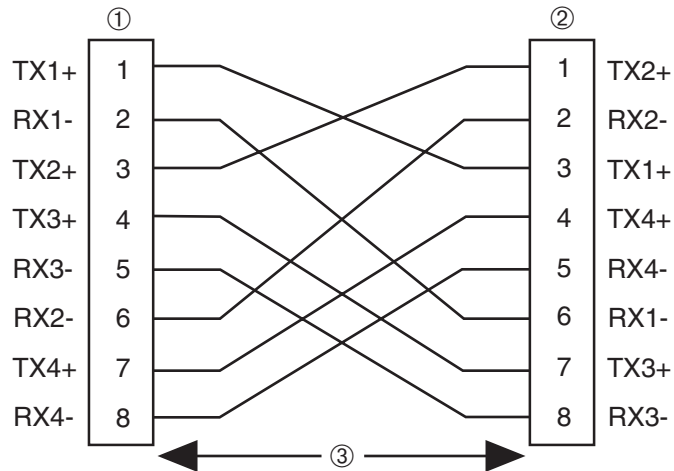
- | | |
|--|---|
| <p>1 RJ45 device port</p> <p>2 Other device port</p> | <p>3 RJ45-to-RJ45 crossover cable</p> <p>4 RX+/RX- and TX+/TX- connections. These connections must share a common color pair.</p> |
|--|---|

Figure 3-10 Four-Wire Straight-through Cable RJ45 Pinouts, Connections Between Network Devices



- | | |
|--|--|
| <p>1 RJ45 device port</p> <p>2 Other device port</p> | <p>3 RJ45-to-RJ45 straight-through cable</p> <p>4 RX+/RX- and TX+/TX- connections. These connections must share a common color pair.</p> |
|--|--|

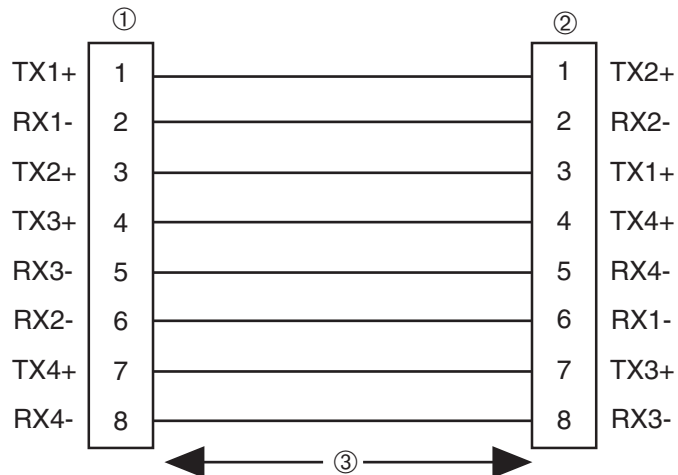
Figure 3-11 Eight-Wire Crossover Cable RJ45 Pinouts, Connections Between Network Devices



- 1 RJ45 device port
2 Other device port

3 RJ45-to-RJ45 crossover cable

Figure 3-12 Eight-Wire Straight-Through Cable RJ45 Pinouts, Connections Between Switches and End System Devices



- 1 RJ45 device port
2 Other device port

3 RJ45-to-RJ45 straight-through cable

Connecting Fiber-Optic Cables to Mini-GBICs

This section provides the procedure for connecting 1-Gigabit Ethernet fiber-optic segments from the network or other devices to Mini-GBIC MT-RJ or LC port connectors installed in the optional 7G-6MGBIC or 7G-6MGBIC-A interface. An MT-RJ connector is shown in [Figure 3-13](#) and an LC connector is shown in [Figure 3-14](#).

Each fiber-optic link consists of two fiber-optic strands within the cable: Transmit (TX) and Receive (RX)

The transmit strand from an MT-RJ port on the DFE-Gold module interface connects to the receive port of a fiber-optic Gigabit Ethernet device at the other end of the segment. The receive strand connects to the transmit port of the fiber-optic Gigabit Ethernet device.

The following procedure describes how to connect an MT-RJ cable connector ([Figure 3-13](#)) to a Mini-GBIC port connector. This procedure also applies to an LC cable connector shown in [Figure 3-14](#). To connect a cable, refer to [Figure 3-13](#) as an example and proceed as follows:

1. Remove the protective covers (not shown) from the MT-RJ fiber-optic port on the Mini-GBIC and from the connectors on each end of the cable.



Note: When the fiber optic connectors of the Mini-GBICs are not in use, leave the protective covers in place to prevent contamination.



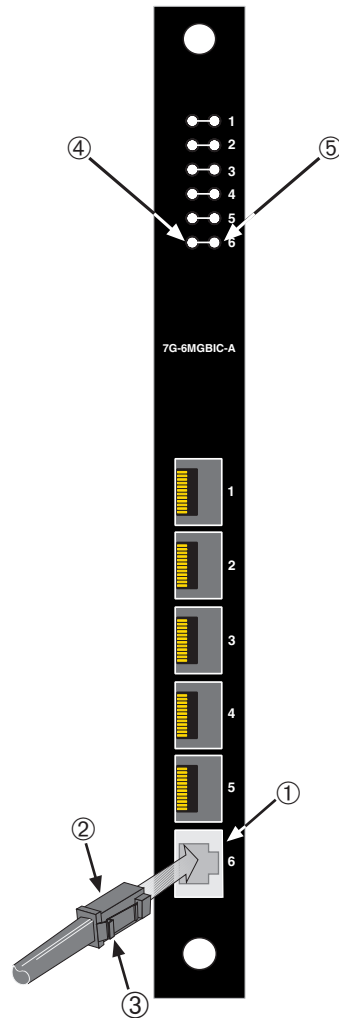
Caution: Do not touch the ends of the fiber-optic strands, and do not let the ends come in contact with dust, dirt, or other contaminants. Contamination of cable ends causes problems in data transmissions. If the ends of the fiber-optic strands become contaminated, use a canned duster to blow the surfaces clean. A cleaning swab saturated with optical-grade isopropyl alcohol may also be used to clean the ends.

Precaución: No toque los extremos de los cables de fibra óptica y evite su contacto con el polvo, la suciedad o con cualquier otro contaminante. Si los extremos de los cables se ensucian, es posible que la transmisión de datos se vea afectada. Si nota que los extremos de los cables de fibra óptica se ensucian, utilice aire comprimido para limpiarlos. También puede limpiarlos con un estropajo embebido en alcohol isopropílico.

2. Insert the MT-RJ cable connector into the Mini-GBIC until it clicks into place.

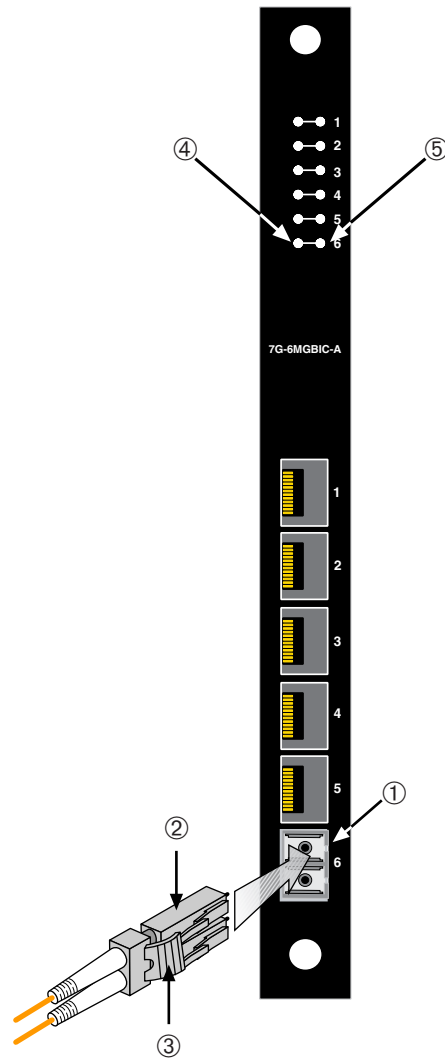


Note: To remove the MT-RJ cable connector, press on its release tab and pull it out of the Mini-GBIC connector.

Figure 3-13 Cable Connection to MT-RJ Fiber-Optic Connectors

- | | |
|---------------------------------------|---------------------|
| 1 Installed Mini-GBIC MT-RJ connector | 4 Receive LED (RX) |
| 2 MT-RJ cable connector | 5 Transmit LED (TX) |
| 3 Release tab | |

Figure 3-14 Cable Connection to LC Fiber-Optic Connectors



- | | |
|------------------------------------|---------------------|
| 1 Installed Mini-GBIC LC connector | 4 Receive LED (RX) |
| 2 LC cable connector | 5 Transmit LED (TX) |
| 3 Release tab | |

3. Plug the other end of the cable into the appropriate port on the other device. Some cables may be terminated at the other end with two separate connectors, one for each

fiber-optic strand. In this case, ensure that the transmit fiber-optic strand is connected to the receive port and the receive fiber-optic strand to the transmit port.

4. Verify that a link exists by checking that the port RX LED is on (flashing amber, blinking green, or solid green). If the RX LED is off, perform the following steps until it is on:
 - a. Verify that the device at the other end of the segment is ON and connected to the segment.
 - b. If there are separate fiber-optic connections on the other device, check the crossover of the cables. Swap the cable connections if necessary.
 - c. Check that the fiber-optic connection meets the dB loss and cable specifications outlined in the *Cabling Guide* for multimode fiber-optic cabling. To obtain this document, refer to “[Related Documents](#)” on page xiv.

If a link has not been established, refer to [Chapter 4](#) for LED troubleshooting details. If a problem persists, refer to “[Getting Help](#)” on page 1-8 for details on contacting Enterasys Networks for support.
5. Repeat steps 1 through 4, above, until all connections have been made.

Connecting to COM Port for Local Management

This section describes how to install a UTP straight-through cable with RJ45 connectors and optional adapters to connect a PC, a VT series terminal, or a modem to an Enterasys Networks module to access Local Management. This section also provides the pinout assignments of the adapters.

What Is Needed

The following is a list of the user-supplied parts that may be needed depending on the connection:

- RJ45-to-DB9 female adapter
- UTP straight-through cable with RJ45 connectors
- RJ45-to-DB25 female adapter
- RJ45-to-DB25 male adapter

With a UTP straight-through cable with RJ45 connectors and RJ45-to-DB9 adapter, you can connect products equipped with an RJ45 COM port to an IBM or compatible PC running a VT series emulation software package.

With a UTP straight-through cable and RJ45-to-DB25 female adapter, you can connect products equipped with an RJ45 COM port to a VT series terminal or VT type terminals running emulation programs for the VT series.

With a UTP straight-through cable and an RJ45-to-DB25 male adapter, you can connect products equipped with an RJ45 COM port to a Hayes compatible modem that supports 9600 baud.

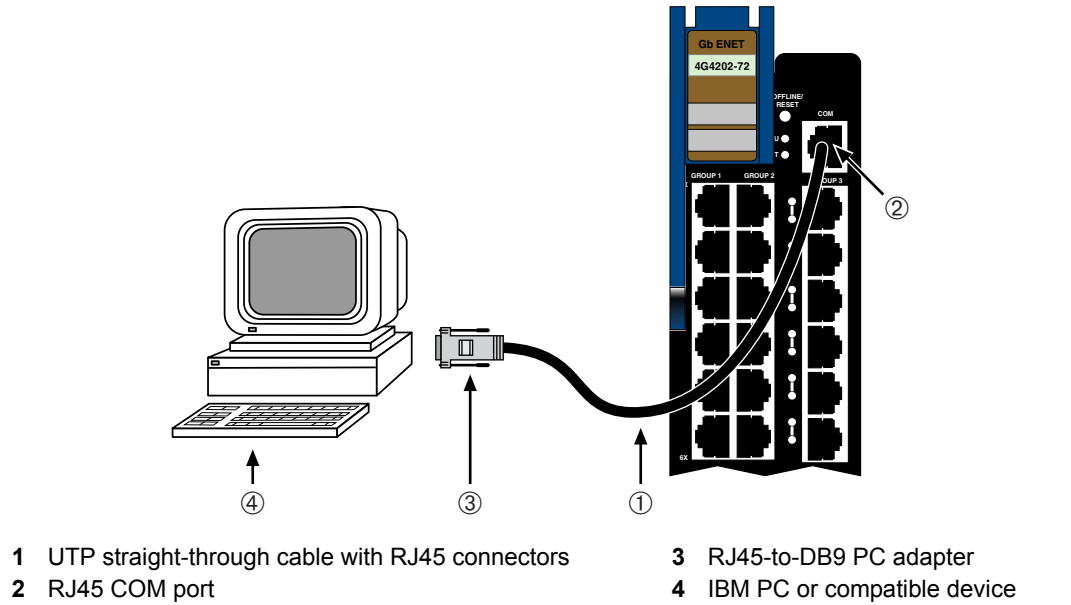
Connecting to an IBM PC or Compatible Device

To connect an IBM PC or compatible device, running the VT terminal emulation, to an Enterasys Networks module COM port (Figure 3-15), proceed as follows:

1. Connect the RJ45 connector at one end of a UTP straight-through cable to the communications COM port on the Enterasys Networks module. (The COM port is also known as a Console port.)
2. Plug the RJ45 connector at the other end of the UTP straight-through cable into an RJ45-to-DB9 adapter .
3. Connect the RJ45-to-DB9 adapter to the communications port on the IBM PC.
4. Turn on the PC and configure your VT emulation package with the following parameters:

Parameter	Setting
Mode	7 Bit Control
Transmit	Transmit=9600
Bits Parity	8 Bits, No Parity
Stop Bit	1 Stop Bit

5. When these parameters are set, the Local Management password screen will display. Refer to the appropriate *Matrix DFE-Gold Series Configuration Guide* for further information.

Figure 3-15 Connecting an IBM PC or Compatible Device

Connecting to a VT Series Terminal

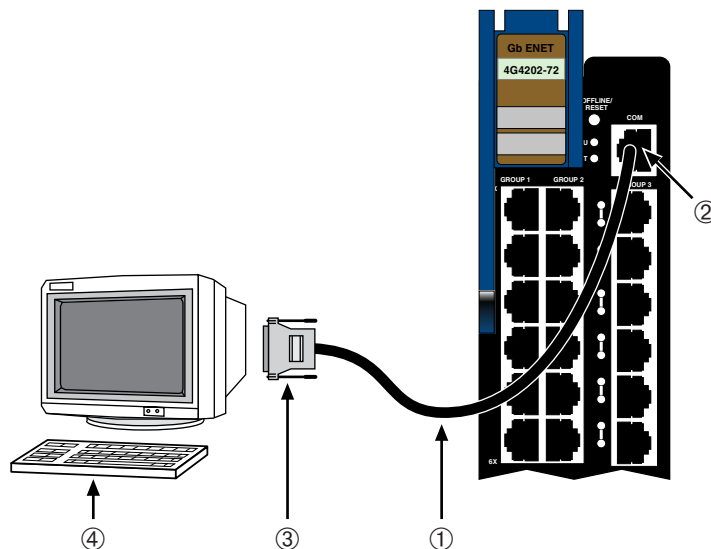
To connect a VT Series terminal to an Enterasys Networks DFE-Gold module COM port (Figure 3-16), use a UTP straight-through cable with RJ45 connectors and an RJ45-to-DB25 female adapter, and proceed as follows:

1. Connect the RJ45 connector at one end of the UTP straight-through cable to the COM port on the Enterasys Networks module.
2. Plug the RJ45 connector at the other end of the UTP straight-through cable into the RJ45-to-DB25 female adapter.
3. Connect the RJ45-to-DB25 adapter to the port labeled COMM on the VT terminal.
4. Turn on the terminal and access the Setup Directory. Set the following parameters on your terminal:

Parameter	Setting
Mode	7 Bit Control
Transmit	Transmit=9600
Bits Parity	8 Bits, No Parity
Stop Bit	1 Stop Bit

When these parameters are set, the Local Management password screen will display. Refer to the *Matrix DFE-Gold Series Configuration Guide* for further information.

Figure 3-16 Connecting a VT Series Terminal



- | | |
|---|---------------------------|
| 1 UTP straight-through cable with RJ45 connectors | 3 RJ45-to-DB25 VT adapter |
| 2 RJ45 COM port | 4 VT series terminal |

Connecting to a Modem

To connect a modem to an Enterasys Networks DFE-Gold module COM port (Figure 3-17), use a UTP straight-through cable with RJ45 connectors and an RJ45-to-DB25 male adapter, and proceed as follows:

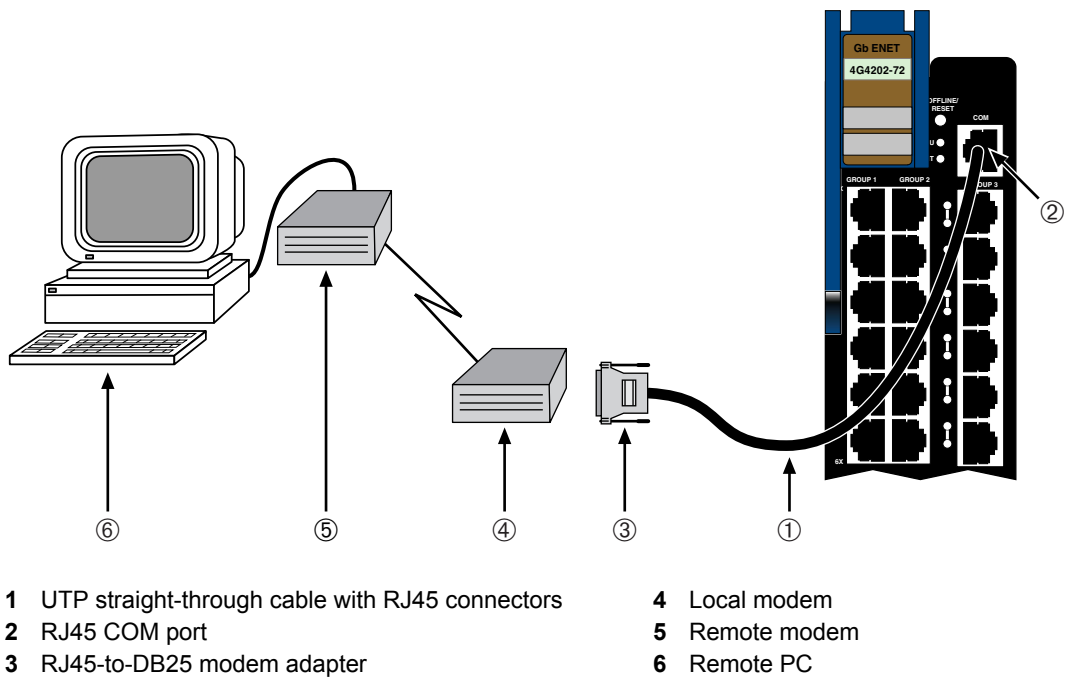
1. Connect the RJ45 connector at one end of the UTP straight-through cable to the COM port of the DFE-Gold module.
2. Plug the RJ45 connector at the other end of the UTP straight-through cable into the RJ45-to-DB25 modem adapter.
3. Connect the RJ45-to-DB25 adapter to the communications port on the modem.
4. Turn on the modem.

5. With a PC connected to a remote modem, you can configure the switch remotely. To accomplish this, you must configure your PC VT emulation package with the following parameters.

Parameter	Setting
Mode	7 Bit Control
Transmit	Transmit=9600
Bits Parity	8 Bits, No Parity
Stop Bit	1 Stop Bit

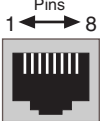
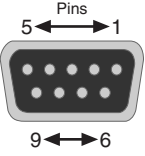
6. When these parameters are set, the Local Management password screen will display. Refer to the *Matrix DFE-Gold Series Configuration Guide* for further information.

Figure 3-17 Connecting to a Modem

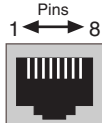
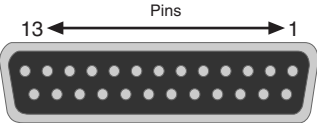


Adapter Wiring and Signal Assignments

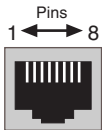
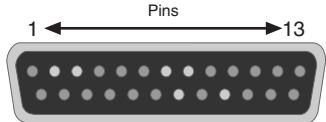
COM Port Adapter Wiring and Signal Diagram			
RJ45		DB9	
Pin	Conductor	Pin	Signal
1	Blue	2	Receive (RX)
4	Red	3	Transmit (TX)
5	Green	5	Ground (GRD)
2	Orange	7	Request to Send (RTS)
6	Yellow	8	Clear to Send (CTS)

 <p>RJ45 Connector (Female)</p>	 <p>DB9 Connector (Female)</p>
--	--

VT Series Port Adapter Wiring and Signal Diagram			
RJ45		DB25	
Pin	Conductor	Pin	Signal
4	Red	2	Transmit (TX)
1	Blue	3	Receive (RX)
6	Yellow	5	Clear to Send (CTS)
5	Green	7	Ground (GRD)
2	Orange	20	Data Terminal Ready

 <p>RJ45 Connector (Female)</p>	 <p>DB25 Connector (Female)</p>
--	---

Modem Port Adapter Wiring and Signal Diagram			
RJ45		DB25	
Pin	Conductor	Pin	Signal
1	Blue	2	Transmit (TX)
2	Orange	8	Data Carrier Detect (DCD)
4	Red	3	Receive
5	Green	7	Ground (GRD)
6	Yellow	20	Data Terminal Ready (DTR)
8	Gray	22	Ring Indicator

 <p>RJ45 Connector (Female)</p>	 <p>DB25 Connector (Male)</p>
--	---

Completing the Installation

Completion of the DFE module installation depends upon the type of system in which the module is being installed.

- If installing in a new DFE module system, refer to [“Completing the Installation”](#) on page 3-29.
- If installing in an established, operating DFE module system, refer to [“Completing the Installation of a DFE-Gold Module in an Existing System”](#) on page 3-31.

Completing the Installation of a New System

In a new system of DFE modules, one of the installed DFE modules will become the management module on chassis power up, and all DFE modules will automatically be set to the factory default values. A complete list of the factory default values are provided in Chapter 3 of the *Matrix DFE-Gold Series Configuration Guide*.

After installing all DFE-Gold modules into the host chassis and making the connections to the network, proceed to the following [First-Time Log-In Using a Console Port Connection](#) procedure to access the module management startup screen from your PC, terminal, or modem connection.

First-Time Log-In Using a Console Port Connection



Note: This procedure applies only to initial log-in, and to logging in to a device not yet configured with administratively-supplied user and password settings.

By default, the Matrix DFE Series device is configured with three user login accounts: **ro** for Read-Only access; **rw** for Read-Write access; and **admin** for super-user access to all modifiable parameters. The default password is set to blank (carriage return). For information on changing these default passwords, refer to Chapter 3 in the *Matrix DFE-Gold Series Configuration Guide*.

Start the Command Line Interface (CLI) from the module's local console port as follows:

1. Connect a terminal to the local console port as described in “[Connecting to COM Port for Local Management](#)” on page 3-23. The startup screen, [Figure 3-18](#), displays.
2. At the login prompt, enter one of the following default user names:
 - **ro** for Read-Only access,
 - **rw** for Read-Write access, or
 - **admin** for Super User access. (This access level allows Read-Write access to all modifiable parameters, including user accounts.)
3. Press **Enter**.
4. The Password prompt displays. Leave this string blank and press **Enter**. The module information and Matrix prompt displays as shown in [Figure 3-18](#).

The DFE-Gold module is now ready to be configured. For information about setting the IP address and configuring Telnet settings for remote access to DFE management, refer to Chapter 3 in the *Matrix DFE-Gold Series Configuration Guide*. The CLI commands enable you to initially set up and perform more involved management configurations.

The *Matrix DFE-Gold Series Configuration Guide* is available online at:

<http://www.enterasys.com/support/manuals>

If you require assistance, contact Enterasys Networks using one of the methods described in “[Getting Help](#)” on page 1-8.

Figure 3-18 Matrix DFE Startup Screen Example (N7 Chassis)

```
login: admin
Password:

M A T R I X N7
Command Line Interface

Enterasys Networks, Inc.
50 Minuteman Rd.
Andover, MA 01810-1008 U.S.A.

Phone: +1 978 684 1000
E-mail: support@enterasys.com
WWW: http://www.enterasys.com

(c) Copyright Enterasys Networks, Inc. 2003

Chassis Serial Number: xxxxxxxxxxxxxx
Chassis Firmware Revision: xx.xx.xx

Matrix N7(su) ->
```

Completing the Installation of a DFE-Gold Module in an Existing System

In an established DFE module system,

- a DFE module is already established as the management module,
- the passwords have already been set for various users,
- the system IP address is set, and
- other system parameters have been set.

When you install a new DFE module into a system with an existing configured user account, the current system settings in that account are already recognized by the new DFE module and it will operate accordingly.

If you need to change any settings, you can connect a terminal to the local console port as described in “[Connecting to COM Port for Local Management](#)” on page 3-23 to access system management, or use a Telnet connection to access the DFE module system management as described in Chapter 3 of the *Matrix DFE-Gold Series Configuration Guide*.

Logging in with an Administratively-Configured User Account

If the device's default user account settings have been changed, proceed as follows:

1. At the login prompt, enter your administratively-assigned user name and press **Enter**.
2. At the Password prompt, enter your password and press **Enter**.

The notice of authorization and the Matrix prompt displays as shown back in [Figure 3-18](#).



Note: Users with Read-Write (rw) and Read-Only access can use the **set password** command to change their own passwords. Administrators with Super User (su) access can use the **set system login** command to create and change user accounts, and the **set password** command to change any local account password. For information on the **set password** and **set system login** commands, refer to Chapter 3 in the *Matrix DFE-Gold Series Configuration Guide*.

The DFE-Gold module is now ready to be configured. For information about setting the IP address and configuring Telnet settings for remote access to DFE management, refer to Chapter 3 in the *Matrix DFE-Gold Series Configuration Guide*. The CLI commands enable you to initially set up and perform more involved management configurations.

The *Matrix DFE-Gold Series Configuration Guide* is available online at:

<http://www.enterasys.com/support/manuals>

If you require assistance, contact Enterasys Networks using one of the methods described in “[Getting Help](#)” on page 1-8.

Troubleshooting

This chapter provides information concerning the following:

For information about...	Refer to page...
Using LANVIEW	4-1
Troubleshooting Checklist	4-5
Matrix DFE-Gold Series Installation Guide	4-6
Recommended Shutdown Procedure Using OFFLINE/RESET Switch	4-7
Last Resort Shutdown Procedure Using OFFLINE/RESET Switch	4-8

Unless otherwise noted, the following information applies to all DFE modules.

Using LANVIEW

The modules use a built-in visual diagnostic and status monitoring system called LANVIEW. The LANVIEW LEDs ([Figure 4-1](#)) allow quick observation of the network status to aid in diagnosing network problems.

About the Management (MGMT) LED

The MGMT LED (shown in [Figure 4-1](#)) indicates that the module is serving as the Management Module to control the management functions for all DFE-Gold modules in the chassis. The Management Module handles all IP requests to the chassis IP address, such as PING, Telnet, SNMP, or HTTP. The Management Module also handles the CLI configuration sessions via the console port. Therefore, when you connect to a DFE-Gold module COM port to configure a module in the chassis, it is handled by the Management Module regardless of the DFE-Gold module COM port you are connected to.

Viewing the Receive and Transmit Activity

On the 4G4202-72 and 4G4282-49, you can view the receive and transmit activity on the RX and TX LEDs. However, only one group of ports may be viewed at a time. On the 4G4282-49, there are 12 ports per group. On the 4G4202-72, there are 24 ports per group.

To view the receive and transmit activity on a group of attached segments, press the GROUP SELECT button (see [Figure 4-1](#)) to step to the group of interest (Groups 1–3 for the 4G4202-72, and Groups 1–5 for the 4G4282-49). Each time the GROUP SELECT button is pressed, the GROUP LED lights up in sequence, indicating which group is selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each port.

Figure 4-1 LANVIEW LEDs

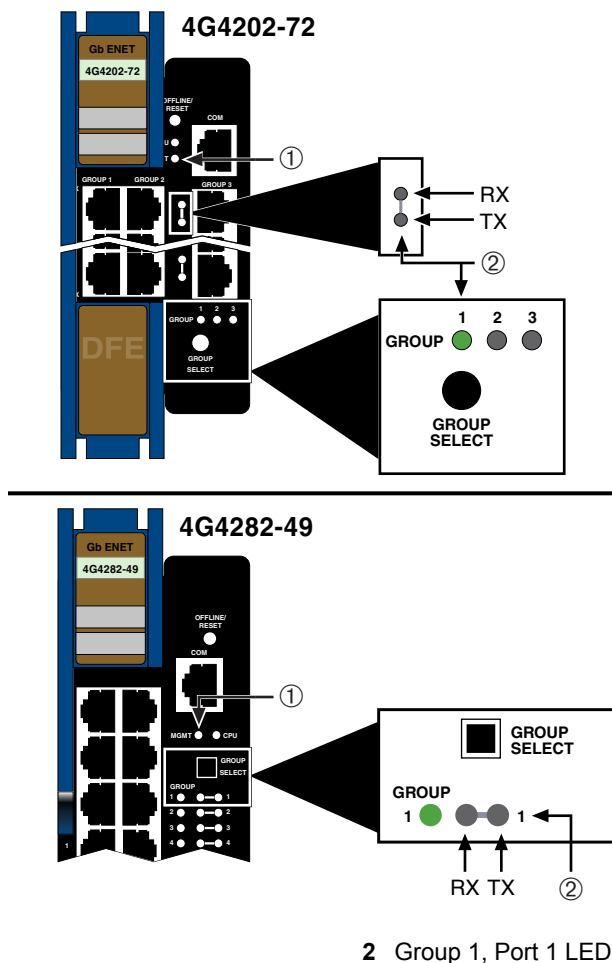


Table 4-1 describes the LED indications and provides recommended actions as appropriate.



The terms **flashing**, **blinking**, and **solid** used in Table 4-1 indicate the following:

- **Flashing** indicates an LED is flashing randomly.
- **Blinking** indicates an LED is flashing at a steady rate (approximately 50% on, 50% off).
- **Solid** indicates a steady LED light. No pulsing.
- **Alternating** indicates an LED is flashing in a steady rate other than 50% on, 50% off.

Table 4-1 LANVIEW LEDs

LED	Color	State	Recommended Action
MGMT	None	Off. This module is NOT the Management Module.	None.
	Green	Solid. This module is the designated Management Module.	None.
	Amber	Flashing. This is a temporary indication that the module is saving data.	None.
CPU	None	Power off.	Ensure chassis has adequate power.
	Amber	Blinking. Module in process of booting.	None.
		Solid. Testing.	If the LED remains amber for several minutes, contact Enterasys Networks for technical support.
	Green	Blinking. Image starts running.	None.
		Solid. Functional.	None.
	Red	Solid. Processor in reset.	None.
	Green and Amber	Blinking. Indicates that the module is in the process of shutting down.	None. This state is activated when the OFFLINE/RESET switch is pressed for less than 1 second to start the process of an orderly shutdown. While in this state, do not remove any DFE-Gold module from the chassis.

Table 4-1 LANVIEW LEDs (continued)

LED	Color	State	Recommended Action
	Amber and off	Alternating (67% on, 33% off) . Indicates that a shutdown process has completed. This indication will remain for 60 seconds before automatically restarting.	While in this state, you have 60 seconds to safely remove the DFE-Gold module from the chassis.
RX (Receive)	None	No link . No activity. Port enabled or disabled.	None.
	Green	Solid . Link present, port enabled, no traffic is being received by the interface.	None.
	Amber	Flashing . Link present, port enabled, traffic is being received by the interface.	None.
	Red	Blinking . Indicates collisions. This indication is only supported on 10/100 ports.	Contact Enterasys Networks for technical support.
TX (Transmit)	None	Port enabled, but no activity.	If it is known that the port should be active and is not, contact Enterasys Networks for technical support.
	Green	Flashing . Indicates data transmission activity. Rate of flashing indicates the data rate.	None.
	Red	Flashing . Fault or Error (collision).	None, unless there is a high rate of activity. In this case, check for network configuration problems or a defective device.

Troubleshooting Checklist

If the module is not working properly, refer to [Table 4-2](#) for a checklist of problems, possible causes, and recommended actions to resolve the problem.

Table 4-2 Troubleshooting Checklist

Problem	Possible Cause	Recommended Action
All LEDs are OFF.	Loss of power.	Ensure that the module was installed properly according to the installation instructions in Chapter 3 , and that the host chassis is providing power.
No Local Management Password screen.	Incorrect terminal setup.	Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for proper setup procedures.
	Improper console cable pinouts.	Refer to Appendix A for proper COM port pinouts.
	Corrupt firmware image, or hardware fault.	If possible, attempt to download the image to the module again. Refer to the section, “ Setting the Mode Switches ,” on page B-1 for instructions on clearing NVRAM.
Cannot navigate beyond Password screen.	Improper username/ password combination entered.	If the username/password combination has been forgotten, refer to the section, “ Setting the Mode Switches ,” on page B-1 for instructions on how to set the mode switch to reset the username/ password combination to the default values.
Cannot contact the module through in-band management.	IP address not assigned.	Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for the IP address assignment procedure.
	Port is disabled.	Enable port. Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for instructions to enable/ disable ports.
	Host Port policy and/or management VLAN is incorrectly configured, or not configured.	Verify that a management VLAN exists and that it is associated with the Host Port. Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for information about Host Port and management VLAN configuration.
	No link to device.	Verify that all network connections between the network management station and the module are valid and operating. If the problem continues, contact Enterasys Networks for technical support.

Table 4-2 Troubleshooting Checklist (continued)

Problem	Possible Cause	Recommended Action
Port(s) goes into standby for no apparent reason.	Loop condition detected.	Verify that Spanning Tree is enabled. Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for the instructions to set the type of STA. Review the network design resolve loops. If the problem continues, contact Enterasys Networks for technical support.
User parameters (IP address, device and module name, etc.) were lost when the module power was cycled, the front panel OFFLINE/RESET switch was pressed.	Position of Mode switch (7), Persistent Data Reset, was changed sometime before either cycling power or pressing the OFFLINE/RESET switch, causing the user-entered parameters to reset to factory default settings. Clear Persistent Data that was set through Local Management. The module was moved either from slot-to-slot or from chassis-to-chassis.	Reenter the lost parameters as necessary. Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for the instructions to configure the device. If the problem continues, contact Enterasys Networks for technical support.

DFE-Gold Module Shutdown Procedure



Caution: Do not remove a DFE module from an operating chassis system before reading the following information and instructions.

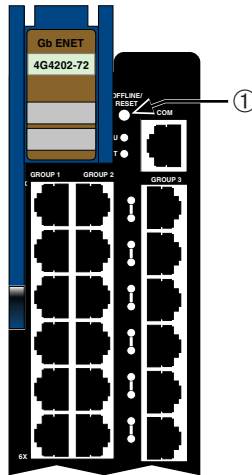
Precaución: Antes de retirar los módulos DFE del chasis en funcionamiento, lea las siguientes instrucciones y la información suministrada.

The DFE-Gold modules installed in a Matrix E7, Matrix N3, Matrix N5, or Matrix N7 chassis are interdependent and operate under a single IP address as a single, distributed switch system (hardware, databases, and persistent storage). In this operating environment, the DFE-Gold module must shut down in an orderly fashion to ensure that the other modules in the system and other devices on the network are notified of the impending change. The device(s) can then make intelligent decisions that ensure the stability of the network before the change is made, thereby increasing network availability.

You can shut down a DFE-Gold module in an operating system using the OFFLINE/RESET switch shown in [Figure 4-2](#). There are two procedures to shut down a DFE-Gold module.

- “Recommended Shutdown Procedure Using OFFLINE/RESET Switch” (page 4-7)
- “Last Resort Shutdown Procedure Using OFFLINE/RESET Switch” (page 4-8)

Figure 4-2 OFFLINE/RESET Switch



1 OFFLINE/RESET switch (in similar location on all DFE modules)

Recommended Shutdown Procedure Using OFFLINE/RESET Switch



Caution: Do not remove a DFE module from an operating chassis system before reading the following information and instructions.

Precaución: Antes de retirar los módulos DFE del chasis en funcionamiento, lea las siguientes instrucciones y la información suministrada.

Before pulling a DFE-Gold module out of a chassis,

press or tap on its OFFLINE/RESET switch for less than 1 second.

Its CPU LED changes from solid green to blinking between green and amber, indicating that the module is shutting down. At the end of the shutdown routine, the CPU LED changes to a 67%/33% sequence of amber/off, respectively, indicating the module is in a halt state. In this time it is safe to restart or remove the module from the chassis.

When a controlled shutdown is initiated from the OFFLINE/RESET switch, you have 60 seconds from the time the CPU starts alternately flashing amber/off until the device automatically restarts.



Note: The only safe time to remove a DFE-Gold module from the chassis is when the CPU LED is alternately flashing amber/off. Otherwise, system operation will be interrupted.

Last Resort Shutdown Procedure Using OFFLINE/RESET Switch



Caution: This method of shutting down a DFE module is not recommended except as a last resort, because all processes currently running on the module will be interrupted, resulting in loss of frames.

Precaución: No se recomienda utilizar este método para apagar los módulos DFE. Recorra a él sólo como último recurso, puesto que interrumpe todos los procesos del módulo en funcionamiento, lo que podría resultar pérdidas de frames.

To reset a DFE-Gold module without it performing an orderly shutdown routine,

press and hold the OFFLINE/RESET switch for approximately 6 seconds.

Removing any DFE-Gold module from the chassis before it has been shut down is not recommended. The only safe time to remove a module from the chassis is after the completion of a shutdown and the management LED is alternately flashing amber/off.



Specifications

This appendix provides information about the following:

For information about...	Refer to page...
DFE-Gold Module Specifications	A-1
Ethernet Interface Module Specifications	A-2
Mini-GBIC Input/Output Specifications	A-3
Gigabit Ethernet Specifications	A-4
COM Port Pinout Assignments	A-7
Regulatory Compliance	A-7

Enterasys Networks reserves the right to change the specifications at any time without notice.

DFE-Gold Module Specifications

[Table A-1](#) provides the I/O ports, processors and memory, physical, and environmental module specifications for the 4G4202-72 and 4G4282-49. Unless otherwise noted, the specifications apply to both DFE modules.

Table A-1 Specifications

Item	Specification
4G4202-72 Ports	
Ports 1 through 72	Seventy-two 10BASE-T/100BASE-TX/1000BASE-T compliant ports through seventy-two RJ45 connectors.
4G4282-49 Ports	
Ports 1 through 48	Forty-eight 10BASE-T/100BASE-TX/1000BASE-T compliant ports through forty-eight RJ45 connectors.
Network Expansion Option Slot	Supports one optional network expansion module.

Table A-1 Specifications (continued)

Item	Specification
Processors/Memory	
Processor	MPC750CX, 400 MHz processor
Dynamic Random Access Memory (DRAM)	128 MB
FLASH Memory	32 MB
Physical	
Dimensions	46.43 H x 6.05 W x 29.51 D (cm) 18.28 H x 2.38 W x 11.62 D (in.)
Approximate Weight	Gross: 5.54 kg (12.0 lb) (shipping carton containing one module) Net: 4.10 kg (9.0 lb) (one module without packaging)
Calculated hours for Mean Time Between Failures (MTBF) for 4G4202-72 and 4G4282-49	For the MTBF hours for these products, refer to the MTBF web site at URL http://www.enterasys.com/support/mtbf/
Environmental	
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 73°C (-22°F to 164°F)
Operating Relative Humidity	5% to 90% (non-condensing)

Ethernet Interface Module Specifications

Refer to [Table A-2](#) for the 7G-6MGBIC and 7G-6MGBIC-A specifications.

Table A-2 7G-6MGBIC and 7G-6MGBIC-A Port/Environmental Specifications

Item	Specification
Mini-GBIC port slots	Six slots that can support optional Mini-GBICs compliant with 1000BASE-SX or 1000BASE-LX fiber optic connections, or 1000BASE-T copper connection. Refer to “Mini-GBIC Input/Output Specifications” (page A-3) for the supported Mini-GBICs.

Table A-2 7G-6MGBIC and 7G-6MGBIC-A Port/Environmental Specifications

Item	Specification
Physical	
Dimensions	4.34 H x 21.97 W x 18.85 D (cm) 1.71 H x 8.65 W x 7.42 D (in.)
Approximate Weight	Net: 0.68 kg (1.5 lb) (one module without packaging)
Calculated hours for Mean Time Between Failures (MTBF)	For the MTBF hours for these products, refer to the MTBF web site at URL http://www.enterasys.com/support/mtbf/
Environmental	
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 73°C (-22°F to 164°F)
Operating Relative Humidity	5% to 90% (non-condensing)

Mini-GBIC Input/Output Specifications

The Mini-Gigabit Ethernet Card (Mini-GBIC) port interface slots can support 1-Gbps fiber-optic and copper connections as described in [Table A-3](#). The optional Mini-GBICs are hot swappable.

Table A-3 Mini-GBIC Input/Output Port Specifications

Item	Specification
MGBIC-LC01	Provides one LC fiber-optic multimode port that is compliant with the 1000BASE-SX standard LC connector.
MGBIC-LC03	Provides one LC fiber-optic multimode port that is compliant with the 1000BASE-LX standard LC duplex style connector.
MGBIC-LC09	Provides one LC fiber-optic single-mode port that is compliant with the 1000BASE-LX standard LC connector.
MGBIC-MT01	Provides one MT-RJ fiber-optic multi-mode port that is compliant with the 1000BASE-SX standard MT-RJ connector.
MGBIC-08	Provides one LC fiber-optic single-mode port that is compliant with the 1000BASE-ELX standard LC connector.
MGBIC-02	Provides one RJ45 copper connection that is compliant with the 1000BASE-T standard RJ45 connector.

Gigabit Ethernet Specifications

The following specifications for the Mini-GBICs shown in [Table A-4](#) through [Table A-12](#) meet or exceed the IEEE 802.3z-1998 standard.

MGBIC-LC01 / MGBIC-MT01 Specifications (1000BASE-SX)

Table A-4 MGBIC-LC01/MGBIC-MT01 Optical Specifications

Item	62.5 μ m MMF	50 μ m MMF
Transmit Power (minimum)	-9.5 dBm	-9.5 dBm
Receive Sensitivity	-17 dBm	-17 dBm
Link Power Budget	7.5 dBm	7.5 dBm

Table A-5 MGBIC-LC01/MGBIC-MT01 Operating Range

Item	Modal Bandwidth @ 850 nm	Range
62.5 μ m MMF	160 MHz/km	2-220 Meters
62.5 μ m MMF	200 MHz/km	2-275 Meters
50 μ m MMF	400 MHz/km	2-500 Meters
50 μ m MMF	500 MHz/km	2-550 Meters

MGBIC-LC03 Specifications (1000BASE-LX)

Table A-6 MGBIC-LC03 Optical Specifications

Item	62.5/125 μ m MMF	50/125 μ m MMF
Transmit Power (minimum)	-9.5 dBm	-9.5 dBm
Transmit Power (maximum)	-3 dBm	-3 dBm
Receive Sensitivity	-20 dBm	-20 dBm
Link Power Budget ¹ (Multimode Only)	10.5 dBm	10.5 dBm

1. The maximum drive distance (up to 2 km) depends on the quality of the installed multimode fiber-optic cable segment. Use the Link Power Budget to calculate the maximum cable length of the attached segment. The Link Power Budget must not exceed those specified in this table. The MGBIC-LC03 input power must not exceed -3 dBm. Otherwise, saturation could occur.

Table A-7 MGBIC-LC03 Operating Range

Item	Modal Bandwidth @ 1310 nm	Range
62.5 μ m MMF	160 MHz/km	2,000 Meters
50 μ m MMF	400 MHz/km	2,000 Meters

MGBIC-LC09 Specifications (1000BASE-LX)

Table A-8 MGBIC-LC09 Optical Specifications

Item	62.5 μ m MMF	50 μ m MMF	10 μ m SMF
Transmit Power (minimum)	-11.5 dBm	-11.5 dBm	-9.5 dBm
Receive Sensitivity	-20 dBm	-20 dBm	-20 dBm
Link Power Budget	8.5 dBm	8.5 dBm	10.5 dBm

Table A-9 MGBIC-LC09 Operating Range

Item	Modal Bandwidth @ 1300 nm	Range
62.5 μ m MMF	500 MHz/km	2-550 Meters
50 μ m MMF	400 MHz/km	2-550 Meters
50 μ m MMF	500 MHz/km	2-550 Meters
10 μ m SMF	N/A	2-10,000 Meters

MGBIC-08 Specifications (1000BASE-ELX)

Table A-10 MGBIC-08 Optical Specifications

Item			
Transmit Power (minimum)	-0 dBm, min.	+2 dBm, typical	+5 dBm, max.
Receive Sensitivity	-24 dBm, min.	-26 dBm, typical	
Maximum Input Power	-3 dBm		

Table A-10 MGBIC-08 Optical Specifications (continued)

Item		
Link Power Budget ¹ (Full Duplex Only)	23 dB	28 dB, typical

1. The maximum drive distance (up to 70 km) depends on the quality of the installed single-mode fiber-optic cable segment. Use the Link Power Budget to calculate the maximum cable length of the attached segment. The Link Power Budget must not exceed those specified in this table. The MGBIC-08 input power must not exceed -3 dBm. Otherwise, saturation could occur.

Table A-11 MGBIC-08 Operating Range

Item	1550 nm	Range
9 or 10 μ m SMF	N/A	70,000 Meters

MGBIC-02 Specifications (1000BASE-T)

Table A-12 MGBIC-02 Specifications

Item	Specification
Supported Cable:	
Type	Copper, Category 5 UTP
Maximum Length	Up to 100 meters
Connector	RJ45
Data Rate	1 Gbps, IEEE 802.3:2000 compatible 1000BASE-T operation only Automatic crossover detection
TX Output impedance	100 ohms, typical at all frequencies between 1 MHz and 125 MHz
RX Input impedance	100 ohms, typical at all frequencies between 1 MHz and 125 MHz

COM Port Pinout Assignments

The COM port is a serial communications port for access to Local Management. Refer to [Table A-13](#) for the COM port pin assignments.

Table A-13 COM Port Pin Assignments

Pin	Signal Name	Input/Output
1	Transmit Data (XMT)	Output
2	Clear to Send (CTS)	Input
3	Data Set Ready (DSR)	Input
4	Receive Data (RCV)	Input
5	Signal Ground (GND)	NA
6	Request to Send (RTS)	Output
7	Data Terminal Ready (DTR)	Output
8	Data Carrier Detect (DCD)	Input

Regulatory Compliance

The 4G4202-72 and 4G4282-49 meet the safety and electromagnetic compatibility (EMC) requirements listed in [Table A-14](#):

Table A-14 Compliance Standards

Regulatory Compliance	Standards
Safety	UL 60950, CSA C22.2 No. 60950, 2006/95/EC, EN 60950, IEC 60950, EN 60825, 21 CFR 1040.10.
Electromagnetic Compatibility (EMC)	47 CFR Parts 2 and 15, CSA C108.8, 2004/108/EC, EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55024, AS/NZS CISPR 22, VCCI V-3.

Mode Switch Bank Settings and Optional Installations

This appendix covers the following items:

For information about...	Refer to page...
Required Tools	B-1
Setting the Mode Switches	B-1
Memory Locations and Replacement Procedures	B-3

Required Tools

Use the following tools to perform the procedures provided in this appendix:

- Antistatic wrist strap
- Phillips screwdriver



Caution: An antistatic wrist strap is required to perform the following procedures to minimize ESD damage to the devices involved.

Precaución: Para minimizar los efectos de las descargas de electricidad estática, deberá utilizar una pulsera antiestática al realizar los siguiente procedimientos.

Setting the Mode Switches



Caution: Read the appropriate sections to be fully aware of the consequences when changing switch settings.

Only qualified personnel should change switch settings.

Precaución: Si desea modificar la configuración del interruptor, lea las secciones correspondientes para saber cuál será el resultado de hacerlo.

Estas modificaciones a la configuración sólo debe realizarlas personal calificado.

Figure B-1 through Figure B-3 show the location of the mode switches and the switch settings for normal operation. These switches are set at the factory to the off position and rarely need to be changed.

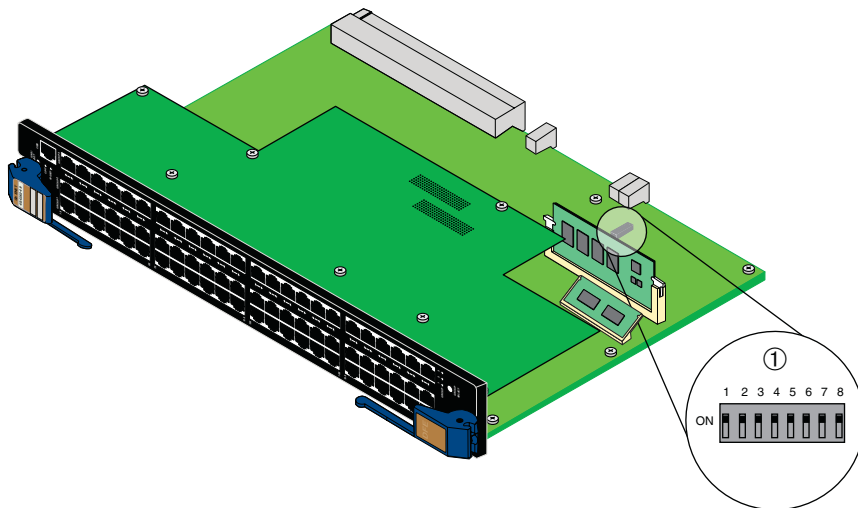
Switch definitions and positions are as follows:

- Switches 1 through 6 – For Enterasys Networks use only.
- Switch 7 – Clear Persistent Data. Changing the position of this switch clears Persistent Data on the next power-up of the module. (Persistent Data refers to data stored in non-volatile memory, or NVRAM.) All user-entered parameters, such as the IP address and module names, are reset to the factory default settings. Once the module resets, you can either use the factory default settings or reenter your own parameters.
- Switch 8 – Clear Admin Password. Changing the position of this switch clears the admin password, and restores the factory default password on the next power-up of the module. Once the module resets, you can either use the factory default settings or reenter your own password.



Note: Do not change the position of Switch 8 unless it is necessary to reset the admin password to its factory default setting.

Figure B-1 Mode Switch Location on 4G4202-72 and 4G4282-49



1 Mode switch pack is in the same location on both DFE-Gold modules (4G4202-72 shown)

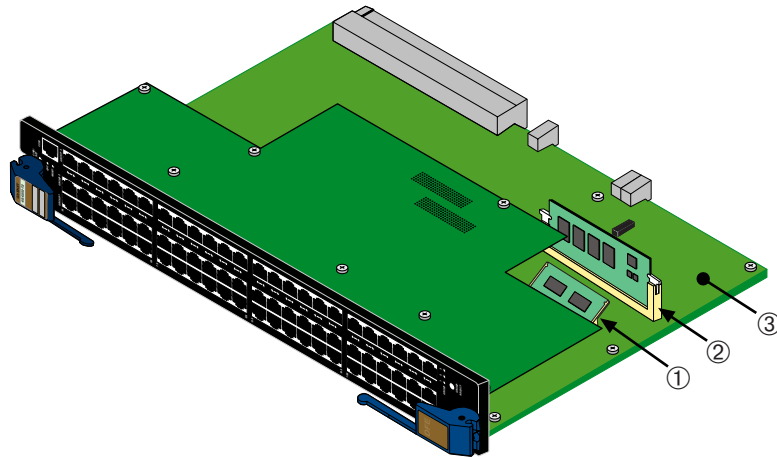
Memory Locations and Replacement Procedures

In the event that the Dual In-Line Memory Module (DIMM) or DRAM Single In-line Memory Module (SIMM) (FLASH memory) needs to be replaced, the following sections describe how to access, locate and replace these memory modules. If you have questions concerning the replacement of either memory module, refer to the section, “[Getting Help](#),” on page 1-8 for details on how to contact Enterasys Networks.

Location of DRAM SIMM and DIMM Memory Modules

[Figure B-2](#) and [Figure B-3](#) show the locations of the DRAM SIMM and DIMM on the each main board of the 4G4202-72 and the 4G4282-49, respectively.

Figure B-2 Memory Module Locations on the 4G4202-72

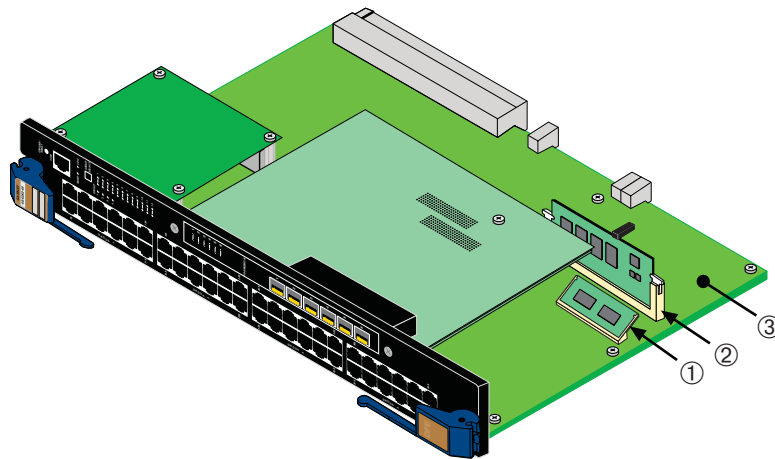


1 DRAM SIMM ¹

2 DIMM

3 Main PC board

1. This is not considered a field replaceable unit on the 4G4202-72.

Figure B-3 Memory Module Locations on the 4G4282-49

1 DRAM SIMM

2 DIMM

3 Main PC board

DRAM SIMM Replacement Procedure



Note: To replace the DRAM SIMM on the 4G4282-49, you must remove the network expansion module if one is installed.

Removing the DRAM SIMM



Caution: Observe all Electrostatic Discharge (ESD) precautions when handling sensitive electronic equipment.

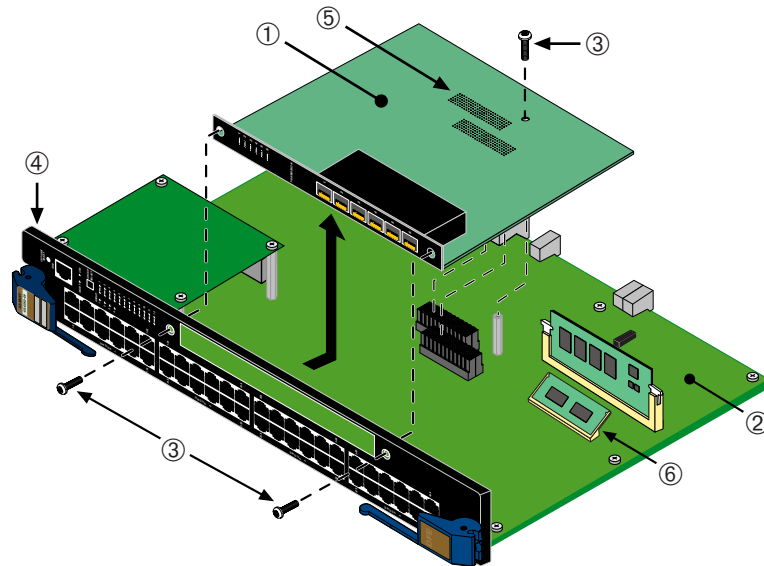
Precaución: Al trabajar con equipos electrónicos sensibles, tome todas las precauciones de seguridad para evitar descargas de electricidad estática.

To remove the DRAM SIMM, proceed as follows:



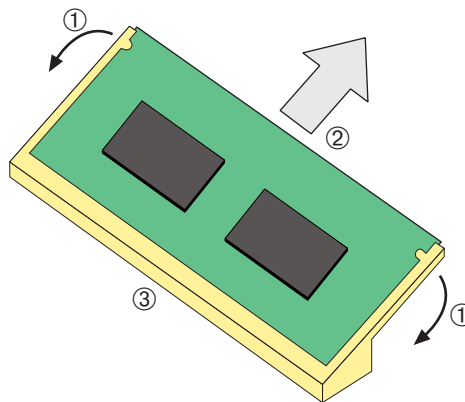
Note: Prior to removing the DRAM SIMM from a 4G4282-49, you must remove the network expansion module to gain access to the DIMM memory and connector.

1. If a network expansion module is installed on the main board of the 4G4282-49, refer to [Figure B-4](#) on page B-5 and proceed to step 1a. Otherwise proceed to step 2.
 - a. Remove and save the three screws attaching the network expansion module to the front panel and to the standoff on the main PC board.
 - b. Lift the network expansion module straight up and off the two module connectors on the main PC board.

Figure B-4 NEM Removal and DRAM SIMM Connector Location on 4G4282-49

- | | |
|--|-----------------------------------|
| 1 Network Expansion Module (not on all DFEs) | 4 DFE module front panel |
| 2 Main PC board | 5 Module connectors on main board |
| 3 Screws (3) | 6 DRAM SIMM memory module |

- Refer to [Figure B-5](#). Push the connector arms away from the DRAM SIMM and simultaneously lift the DRAM SIMM enough to release it from the connector fingers.

Figure B-5 Removing the Existing DRAM SIMM from 4G4282-49

- | | | |
|------------------|-------------|---------------------|
| 1 Connector arms | 2 DRAM SIMM | 3 Connector fingers |
|------------------|-------------|---------------------|

- Rotate the DRAM SIMM upward, then remove it from the connector fingers.

Installing the DRAM SIMM on 4G4282-49



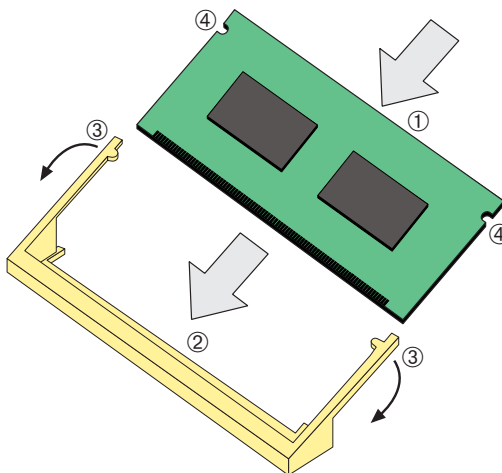
Caution: Observe all Electrostatic Discharge (ESD) precautions when handling sensitive electronic equipment.

Precaución: Al trabajar con equipos electrónicos sensibles, tome todas las precauciones de seguridad para evitar descargas de electricidad estática.

To install a DRAM SIMM, refer to [Figure B-6](#) and proceed as follows:

1. Insert the DRAM SIMM down between the connector fingers.
2. Pivot the DRAM SIMM downward so the tabs on the connector arms align with the two DRAM SIMM alignment notches. With the two connector arms spread outward, push the DRAM SIMM down between the connector arms. Release the two connector arms to lock the DRAM SIMM into place.

Figure B-6 Installing the DRAM SIMM on 4G4282-49



1 DRAM SIMM
2 Connector fingers

3 Connector arms
4 DRAM SIMM alignment notches (2)

DIMM Replacement Procedure

The DIMM is considered a field replaceable unit on both the 4G4202-72 and 4G4282-49.

Removing the DIMM



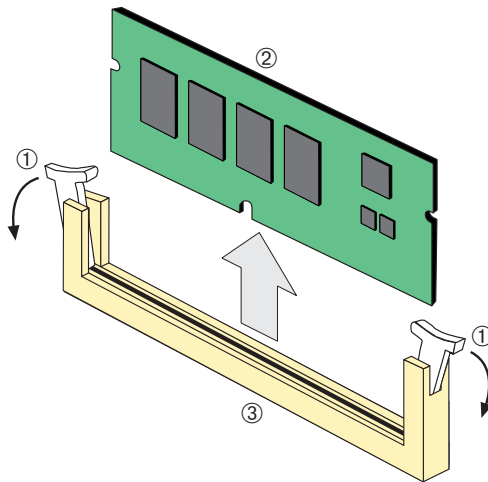
Caution: Observe all Electrostatic Discharge (ESD) precautions when handling sensitive electronic equipment.

Precaución: Al trabajar con equipos electrónicos sensibles, tome todas las precauciones de seguridad para evitar descargas de electricidad estática.

To remove the existing DIMM, proceed as follows:

1. Locate the DIMM connector on the main PC board. Refer to [Figure B-2](#).
2. Push the connector arms away from the DIMM, as shown in [Figure B-7](#), enough to release the DIMM from the connector contacts.

Figure B-7 Removing Existing DIMM from 4G4202-72 or 4G4282-49



1 Connector arms **2** DIMM **3** Connector contacts

3. Pull the DIMM straight up and remove it from the connector contacts.

Installing the DIMM on 4G4202-72 or 4G4282-49



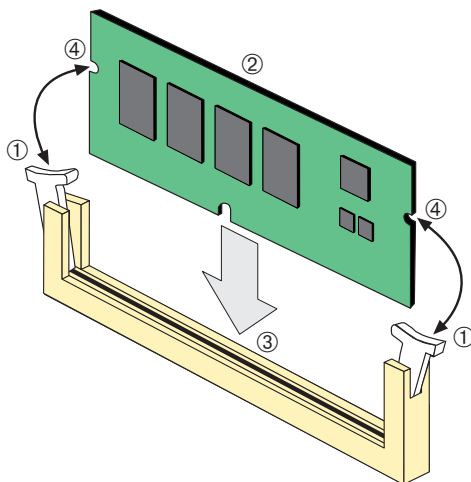
Caution: Observe all Electrostatic Discharge (ESD) precautions when handling sensitive electronic equipment.

Precaución: Al trabajar con equipos electrónicos sensibles, tome todas las precauciones de seguridad para evitar descargas de electricidad estática.

To install a DIMM, refer to [Figure B-8](#) and proceed as follows:

1. Push the connector arms away from the DIMM enough to insert the DIMM into the connector contacts.
2. Insert the DIMM straight down between the connector contacts enough for the tabs on the connector arms to align with the two DIMM alignment notches.
3. Push the DIMM down into the connector contacts, then rotate the two connector arms toward the DIMM to lock it into place.

Figure B-8 Installing the DIMM on 4G4202-72 or 4G4282-49



1 DIMM Connector arms
2 DIMM

3 Connector contacts
4 DIMM alignment notches (2)

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